



Swift Owner's Handbook



THE IDEAL COMBINATION



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The vehicle you use to tow your caravan is also a crucial factor. Here too Chartered Trust can help. We

have a wide choice of motor finance programmes, each designed to meet the varied needs of the private or business motorist.



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INTRODUCTION

DEAR OWNER,

THANK YOU FOR DECIDING TO BUY ONE
OF OUR NEW CARAVANS. WE ARE SURE
YOU WILL ENJOY MANY HAPPY HOURS
IN IT AND WE HOPE THE INFORMATION
AND HINTS IN THIS HANDBOOK WILL
HEIGHTEN YOUR ENJOYMENT.

THE HANDBOOK HAS BEEN DESIGNED
TO GIVE YOU A GENERAL GUIDE TO THE
CARE, USE AND MAINTENANCE OF YOUR
CARAVAN. WHETHER YOU ARE A NEW OR
AN EXPERIENCED CARAVANNER THE
HINTS WILL HELP TO PROTECT YOUR
INVESTMENT.

THE INFORMATION CONTAINED WILL
ANSWER MOST OF YOUR QUERIES, BUT
IF THERE ARE ANY ASPECTS WHICH ARE
NOT COVERED PLEASE CONSULT YOUR
APPOINTED DEALER.

HAPPY CARAVANNING!

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Maintenance



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THE TOWING CODE

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The Towing Code

THE CARAVAN TOWING CODE

This Code of Practice contains recommendations jointly reviewed and agreed by the following organisations:

The National Caravan Council
The Caravan Club
The Camping and Caravanning Club
The Caravan Writers Guild
The Department of Transport

Scope of the Code

The Code applies to all trailer caravans of maximum laden weight not exceeding 3500 kg (7,700 lbs), overall width not exceeding 2.3m (7ft 6in approximately) and overall length not exceeding 7m (23ft approximately), excluding the drawbar and coupling.

This is legally the maximum size of trailer that can be towed by a motor vehicle with a maximum gross weight of less than 3500 kg.

CARAVAN TERMS

Mass in Running Order:

The mass of the caravan as stated by the caravan manufacturer, as new with standard fixtures and fittings.

Note: Because of differences in the weight of materials supplied for the construction of caravans, a tolerance of +3% of the weight has been allowed in the Mass in Running Order weight.

User Payload:

The maximum allowable weight to be put into the caravan whilst it is being towed. This is made up of 3 sections:

Personal effects, optional equipment and essential habitation equipment.

The user payload is the difference between the Maximum Technically Permissible Laden Mass and the Mass in Running Order.

Essential Habitation Equipment:

Those items and fluids required for safe and proper functioning of the equipment for habitation as defined by manufacturer of the caravan.

Personal Effects:

Those items which a user can choose to carry in a caravan and which are not included as Essential Habitation Equipment or Optional equipment.

Optional Equipment

Items made available by the manufacturer over and above the standard specification of the caravan.

Maximum Technically Permissible Laden Mass:

The maximum weight for which the caravan is designed for normal use when being towed on a road, laden. This should not be exceeded. This mass takes into account specific operating conditions including factors such as the strength of materials,

loading capacity of tyres etc.

Nose weight:

That part of the static mass of the caravan supported by the towing device on the rear of the towing vehicle.

Notes:

- (i) When measuring the noseweight it is important that the caravan is fully loaded. Do not place extra items indiscriminately into the caravan after this adjustment has been made.
- (ii) The caravan is intended to be towed slightly nose heavy. The nose weight can be adjusted by distribution of the load within the caravan. The nose weight should be approximately 7% of the actual laden weight (but not greater than the hitch capacity) and at the same time suit the towing vehicle. See section on Measurement of Nose Weight.
- (iii) It is not recommended that you tow with just a battery, spare wheel and gas bottles as this may exceed the the permitted nose weight. Additional payload must be placed behind the axle to compensate for this or consider repositioning the wheel to a underfloor carrier.

TOWING VEHICLE TERMS

Kerb weight (Mass of Vehicle in Running Order):

The weight of the towing vehicle as defined by the vehicle manufacturer. This is normally with a full tank of fuel, with an adequate supply of liquids incidental to the vehicles propulsion, without driver or passengers, without any load except loose tools and equipment with which the vehicle is normally provided and without any towing bracket.

Caravan to Towing Vehicle Weight Ratio:

The towing vehicle to caravan weight ratio can be determined by calculation and is equal to:

$$\frac{\text{actual laden weight of caravan}}{\text{Kerb weight of towing vehicle}} \times 100\%$$

THE **LAW** REQUIRES THAT CARAVANS & THEIR TOWING VEHICLES & THE LOADS THEY CARRY MUST BE IN SUCH A CONDITION THAT NO DANGER OR NUISANCE IS CAUSED.

(Regulation 100 of the Road and Vehicles [Construction and Use] Regulations 1986).

Power to weight ratio:

No hard and fast rules can be stated but, here is a general guide.

- (a) Conventional petrol engines with a capacity up to approximately 1500 cc should be adequate for towing a

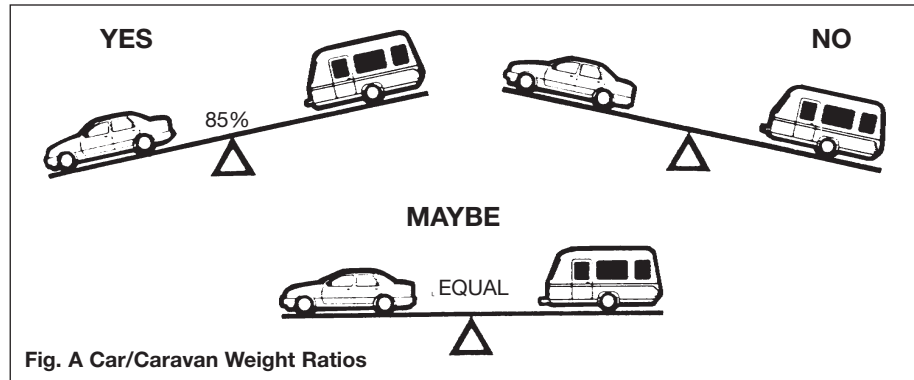


Fig. A Car/Caravan Weight Ratios

caravan weighing around 85% of the kerb weight of the towing vehicle.

- (b) Above 1500 cc such engines should manage a caravan weighing up to 100% of the kerb weight of the towing vehicle and still give adequate performance.

Note: The towing vehicle manufacturer's limit is, in some cases, less than the kerb weight.

Vehicles with automatic transmission may need an oil cooler fitting or the SAE rating of the gearbox oil increasing when towing. The advice of the vehicle manufacturer should be sought.

Mass in Running Order:

Caravanners can use a public weighbridge to establish the mass in running order.

Note: Weighbridges have varying weight tolerance levels.

Maximum Permissible Towing Mass:

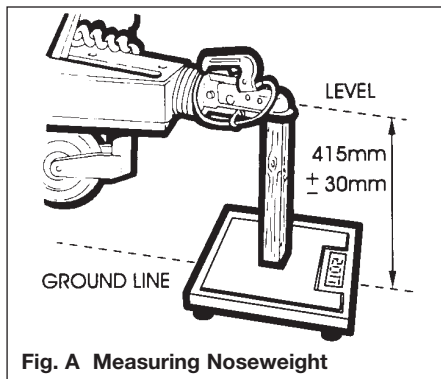
The weight defined by the vehicle manufacturer as being the maximum that the vehicle is designed to tow.

Train Weight (Combination Weight):

The maximum combined weight of the towing vehicle and trailer combination as specified by the towing vehicle manufacturer.



The Towing Code



MEASUREMENT OF NOSEWEIGHT

Noseweight may be measured using a propriety brand of noseweight indicator.

Such equipment is obtainable at your Caravan Dealer.

Note: These indicators have a varying tolerance level.

Another simple method is to use bathroom scales under the coupling head with a piece of wood, fitted between the coupling head and the scales, of such length that the caravan floor is horizontal with the jockey wheel raised clear of the ground. (Fig. A)

Noseweight can be adjusted simply by distribution of weights in the caravan. Always

lower jockey wheel before entering the caravan and then raise before measuring again. (See **Loading**).

Note: The height of the towball on the towing vehicle, when laden, is also critical.

TYPE OF DRIVING LICENCE HELD

In order to be able to tow a caravan a driver must hold a Category B licence. Those car drivers who passed their tests prior to 1 January 1997 would have automatically obtained Category B+E. However, anyone who passed their test after 1 January 1997 will need to take a further test in order to obtain a Category B+E if they wish to tow a car and caravan combination whose train weight exceeds 3,500kg, or up to 4,250 if the caravan is less than 750kg or if the caravan's Maximum Technically Permissible Laden Mass exceeds the unladen weight of the car.

Note: The unladen weight of a car is normally less than the kerbside weight.

GLOSSARY & CHECKLIST

Awnings - Can consist of just a simple top sheet but may extend to a five sided frame tent attached to the side of the caravan.

Fire blanket - approved to BS 6575 is ideal for dealing with 'fat pan' fires.

Fire extinguisher - It is strongly recommended that a fire extinguisher is carried in the caravan. (For suitable types see **Safety and Security**).

Gas bottles - Bottled L.P. gas is the most convenient portable source of fuel. Two bottles are required for a constant supply. An initial deposit is payable on each cylinder. We recommend the use of 6kg Propane or 7kg Butane bottles. One position for use and one for storage only. (For detailed information see **Services - Gas**).

Jack - A suitable jack is essential (screw, scissor, side mounted or air jack type). Many car jacks are unsuitable.

Levellers - Levellers help level the caravan from side to side before unhitching. Proprietary products can be purchased from your caravan dealer and need to be positioned as indicated by a spirit level.

Spare Wheel - It is always advisable to carry a spare wheel for your caravan.

Spirit Level - A spirit level is extremely useful when siting the caravan.

Stabiliser - Stabilisers help to dampen the side to side movement of the caravan. One end fits to the car's towing bracket and the other end to the caravan. (See **Stability**)

The Towing Code

Torque Wrench - A torque wrench is the only way that the exact recommended torque can be achieved for wheel nuts and bolts. (See **Preparing for the Road**)

Towing bracket - Car manufacturers recommend that their own bracket is fitted at a specialist dealer, to ensure that it is fixed to the correct mounting points. Never use cheap alternatives, obtain one manufactured by a reputable company complying with the relevant standards.

Wooden blocks - Wooden blocks typically 25cm. square and 2cm. thick are ideal for placing under corner steadies and jockey wheel when the ground is uneven or soft.

Water Containers - Two containers are required, one to carry fresh water to the caravan and one for waste water, which needs to be disposed of properly. Several types are available including jerry cans, folding cans and wheeled containers.

12N & 12S Sockets - Two sockets designated 12N and 12S are fitted to your car to accept corresponding plugs from the caravan. These are necessary to energise the road lights and caravan auxiliary circuits respectively.

12 Volt Battery - A deep cycling, heavy duty leisure type battery should be purchased to provide back-up power for lights, refrigerator and other electrical appliances. (See **Battery**).

WARNING: Your caravan dealer should be consulted if additional equipment is to be fitted as strong points may or may not be provided in the design.

Note: Fitting additional equipment will reduce the caravan allowable payload. Caution should also be exercised as electrical cables may be damaged and could pose a hazard.



The Towing Code

Useful memory aid for other items.

Car	Gas regulator	Domestic	Floor cloth	Tea strainer
Distilled water	Jack	Adhesive tape	Fly spray	Tea towels
External mirrors	Levelling boards	Air freshener	Food	Table cloths
Fan belt	Mallet	Aluminium foil	Food mixer	Table mats
Fire extinguisher	Site/caravan mains lead	Ashtrays	Frying pan	Television
Jack	Spare bulbs	Bin liners	Glasses	Tin opener
Jump leads	(Mandatory in E.C.)	Binoculars	Grill pan	Tissues
Petrol can	Spare 12v fuses	Bottle opener	Jugs	Toilet paper
Socket set	Spare gas hose	Breadboard	Kettle	Torch
Spare bulbs	Spare wheel	Breadbin	Kitchen roll	Towels
Spare keys	Spirit level	Brush and dustpan	Kitchen tools	Toys & Games
Spare wheel	Toilet fluid	Butter dish	Litter bin	Vacuum cleaner
Tool kit	Waste water container	Camera and films	Matches	Washing up bowl
Towball cover	Wheel brace	Carving knife	Measuring jug	
Tow rope		Cassette recorder	Milk jug	Documents
Tyre pressure gauge	Personal	Chairs	Mixing bowl	Bail Bonds
Warning triangle	After sun cream	Clock	Needles and thread	(some Euro countries)
Tyre Pump	First Aid Kit	Clothes brush	Oven gloves	Bank and credit cards
	Flannels	Clothes line	Pegs	Caravan Certificate
Caravan	Hairbrush and comb	Coat hangers	Piezo Gas lighter	Cheque book
Awning pegs and poles	Make up. etc.	Coffee percolator	Potato peeler	CRIS document
Awning ground sheet	Raincoats	Coolbox	Pressure cooker	Driving licence
Battery 12 volt charger	Toothbrush	Colander	Radio	Green Card Insurance
Bucket	Toothpaste	Crockery	Rubbish bin	(some Euro countries)
Corner steady brace	Scissors	Cruet	Salad shaker	Maps and guides
Corner steady pads	Shampoo	Corkscrew	Saucepans	Money
Coupling lock	Shaving kit	Cutlery	Scissors	MOT Certificate
Door mat	Shoe cleaning kit	Dish cloth and brush	Sieve	Vehicle Registration
Fire blanket	Soap	Dusters and polish	Sugar bowl	Documents
Fire extinguisher	Sun tan oil	Disposable cloths	Shopping bags	
Fresh water container	Wellington boots	Egg cups	Sleeping bags	
Gas cylinder		Electrical extension lead	Tea pot	

PREPARING FOR THE ROAD

PRE-LOAD CHECKLIST

Caution: Never enter the caravan without first lowering the four corner steadies with the brace provided.

BEFORE LOADING CHECK:

- loose articles are stowed securely. Do not stow tins, bottles or heavy items in overhead lockers prior to towing.
- all lockers and cupboard doors are closed and secured.
- all bunks are secure.
- all rooflights are closed and secured.
- main table is stored in its transit position.
- fridge is on 12v operation and door lock is set.
- all windows are fully closed and latched. Never tow with windows on nightsetting. Leave all curtains and blinds open to aid rear visibility.
- gas cylinders are correctly positioned, secured and turned off.
- battery is secure and mains connecting cable is disconnected and stowed.
- 12v distribution panel selector switch is set to centre position.

WARNING: Isolate all gas appliances before setting off.

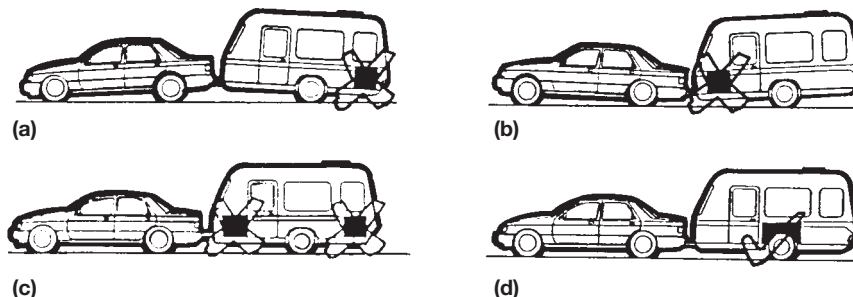


Fig. A Loading your caravan

LOADING AND DISTRIBUTION OF WEIGHT IN THE CARAVAN

Do not exceed recommended maximum loading for your caravan.

1. Load heavy items low down near the floor and mainly over or just in front of the axle(s) (Fig. A).
2. Load evenly right to left so that each caravan wheel carries approximately the same weight.
3. Do not load items at the extreme front or rear since this can lead to instability due to the 'pendulum effect'.
4. Load remainder to give a suitable noseweight at the towing coupling. Check noseweight.

Note: Do not overload car boot.

Note: Please take care to ensure that you have allowed for the masses of all items you intend to carry in the caravan

The Towing Code

Sensible Loading:
How to apportion it

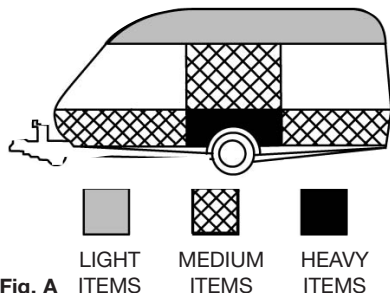


Fig. A

Towing vehicle's rear suspension

It is important that the towing vehicle's rear suspension is not deflected excessively by the noseweight on the tow ball. If it is excessive the steering and stability will be affected. (Fig. B)

The greater the towing vehicle's tail overhang (the distance between the rear axle and the tow ball) the greater the effect the noseweight will have on the towing vehicle's rear suspension.

After trying out the caravan it may be found that stiffening of the rear suspension is necessary - but note that this may give the towing vehicle a firmer ride when not towing.

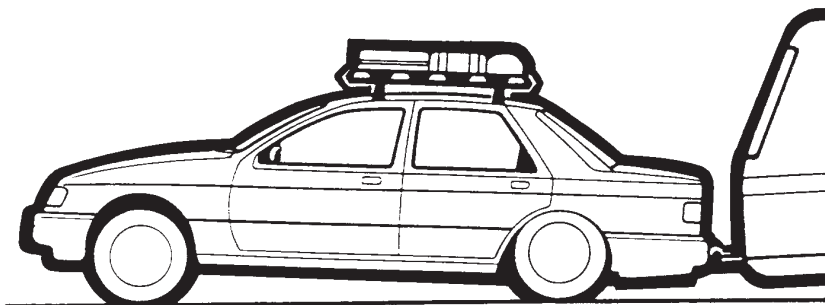


Fig. B Illustration of excessive deflection of vehicle's rear suspension

There are a number of suspension aids available and advice should be sought on which to use and how to fit. It is important to ensure that the caravan is towed either level or slightly nose down.

If you have any doubts about the suitability of your towbar for towing a twin axle caravan consult the towing bracket manufacturer.

DO NOT exceed the:

- Gross Vehicle Mass (G.V.M. on car plate).
- Maximum Technically Permissible Laden Mass (M.T.P.L.M.).
- Gross Vehicle Combination Mass (Train Weight) (G.V.C.M. on car plate).
- Maximum Permissible Towing Mass.

STABILITY

All our models are of a well balanced design and should be exceptionally good towers. The most common causes of poor stability include:

- (a) Worn springs or loose spring fixings on the towing vehicle.
- (b) Towing vehicle springs too soft.
- (c) Insufficient noseweight.
- (d) Nose of caravan is towing too high.

Galvanised steel chassis

Drilling of the galvanised steel chassis will invalidate the warranty. If fixing a towing aid, in the first instance consult your dealer as regards suitability.

The Towing Code

Never drill the coupling head to aid the fitting of a stabiliser.

Suitable towing vehicles

The caravan is manufactured for towing behind normal road cars and is not suitable for towing behind commercial vehicles. It is strongly recommended that whenever a caravan is to be towed over rough terrain, e.g. a farmer's field or track, great care should be taken to ensure that no undue stress is placed upon the caravan via the hitch mounting, i.e. reduce speed. If in doubt, please consult the caravan manufacturer and the towing vehicle manufacturer who will advise on the most appropriate shock absorbing hitch mounting.

Snaking

This is a term used to denote an unstable car and caravan combination where the caravan 'weaves' from side to side often causing a similar swaying movement in the car itself.

Causes:

- i) Unsuitable or unbalanced outfit.
- ii) Incorrect loading or weight distribution.
- iii) Excessive speed especially downhill.
- iv) Side winds.
- v) Overtaking.
- vi) Being overtaken by a large fast moving vehicle.

vii) Erratic driving.

viii) Insufficient tyre pressures.

ix) Mixing radial and cross ply tyres.

Cures:

Cases of persistent snaking can be alleviated by the use of a stabiliser, about which your dealer will advise you.

On the road

If you do find your outfit snaking, try to keep the steering wheel in a central position as far as possible, decelerate and avoid braking if possible.

OTHER IMPORTANT TOWING CONSIDERATIONS THAT COULD AFFECT STABILITY

Types of tyres fitted

The tyres fitted by the manufacturer are suitable for towing at sustained speeds of up to 81 mph (130 kph).

Radial and cross ply tyres should never be mixed. It is dangerous and can cause snaking.

Periodically tyres should be rotated to equalise wear in the same manner as car tyres.

Do not mix four ply/six ply/eight ply tyres on the same axle.

Tyre Tread

The law requires that tyres and pressures must be suitable for the use to which they are being put. The minimum tread depth of both car and caravan tyres must be 1.6mm throughout a continuous band comprising the central three quarters of the breadth of tread and around the entire circumference of the tyre.

Tyre pressures

Towing vehicles' tyres must be at the pressures recommended for towing or heavy loading as stated in handbook not on tyre wall. Towing stability may otherwise be affected. The pressures can be found in the towing vehicle handbook. The caravan tyre pressures should be as recommended in the specification details in your handbook.

Note: Although the caravan may be fitted with the same type of tyre as the towing vehicle, the pressures specified are different. All charts show values for cars and are therefore not applicable for caravans. Pressures displayed on tyre walls apply ONLY in North America and Canada.

Wheels

Caravan wheel nuts should be tightened to a torque of 88Nm (65lb/ft) on steel wheels or 115Nm (85lb/ft) on alloy wheels and should be checked with the use of a torque wrench regularly. Only use a spare wheel and tyre recommended by the manufacturer.



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Wheel Rims

The majority of caravans manufactured since 1993 have been fitted with steel wheel rims which are the wider 5J size incorporating a double safety hump rim which conforms to European standards of safety. The alternative to steel wheel rims are alloy wheel rims.

If you are in any doubt, have your wheels checked by a competent tyre supplier.

Hitch head load capacity

The maximum vertical static load which can be put upon the hitch head when connected is either 75kg or 100kg. Please refer to the technical data in your handbook.

(But see also vehicle manufacturer's weight limits on towball loading.)

PRE-TOW CHECKLIST AND HITCH-UP

Check Gas Locker, Battery Locker (if fitted) and Cassette Toilet (if fitted) door/s are secure.

Check wheelnuts, tyre pressures and tyre conditions.

Fully raise all four corner steadies. (Fig. A).

Pick up any levelling pads or levelling boards.

Check rooflights/vents are securely closed.

Switch off gas supply and change over to electricity if required.

Lock the caravan exterior door.

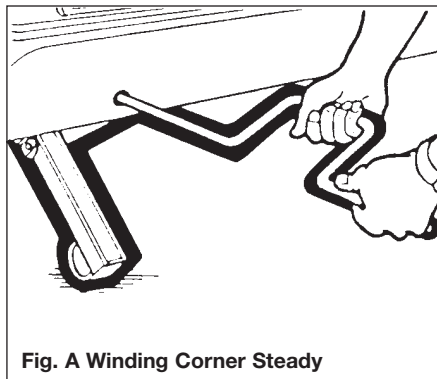


Fig. A Winding Corner Steady

An assistant can help in the hitching operation by standing on the left hand side of the drawbar (facing rear of car) and extending an arm horizontally to indicate position of the coupling. When reversing aim the towball of the car directly at the caravan drawbar. Remove towball cover and keep in car.

Adjust the jockey wheel to ensure the cup is high enough to slide over the towball.

Release caravan handbrake.

Position cup over greased towball, release safety catch and lift handle (Fig. B). The hitch head is fitted with a visual indicator to show whether or not it is properly connected to the towball. A green band will show immediately

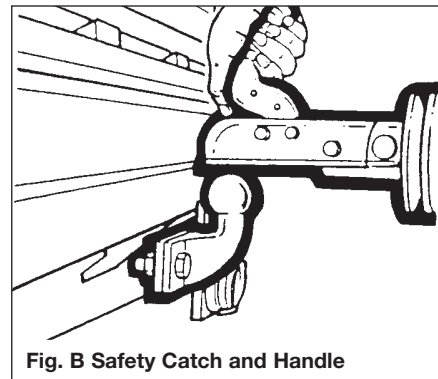


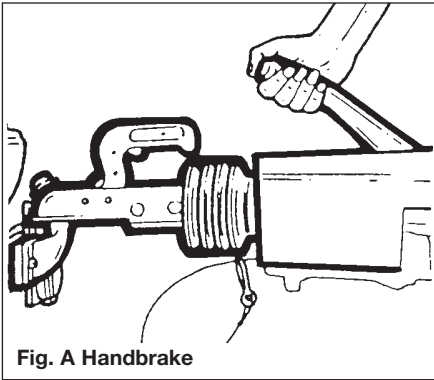
Fig. B Safety Catch and Handle

below the red indicator button on the hitch head when a proper connection has been made. (See Fig. D, Page 11)

WARNING: Serious damage will occur unless the locking button is depressed first and the handle lifted forward before the caravan is lowered manually. This prevents the noseweight being transmitted through the locking button.

WARNING: If the green band is showing when the hitch head is not connected to the towball there is a fault - contact your Dealer.

The Towing Code



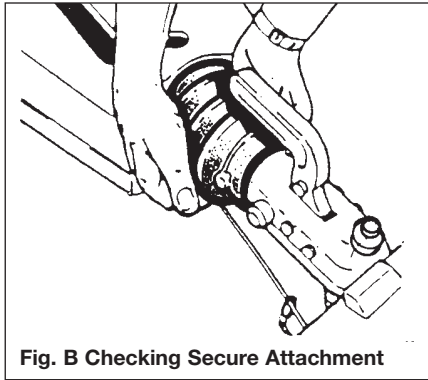
Adjust jockey wheel to lower cup on to the ball. A click indicates it is fully engaged. Ensure locking button has returned to its free position.

Secure caravan handbrake. (Fig. A)

Connect breakaway cable (emergency braking device) in the form of a noose to suitable anchorage point on towbar. **DO NOT** attach to towball.

Ensure that the jockey wheel is fully wound up and properly located in the slots, then release the clamp handle, lift the whole unit as high as possible and retighten the clamp handle.

Note: Ensure jockey wheel locates in recess provided.



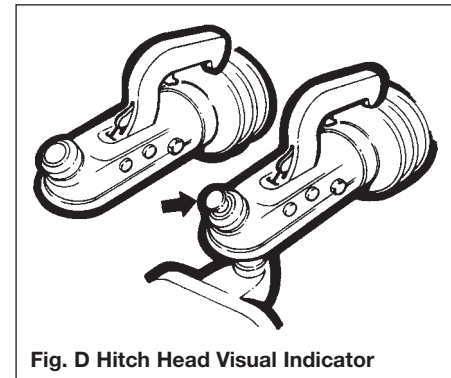
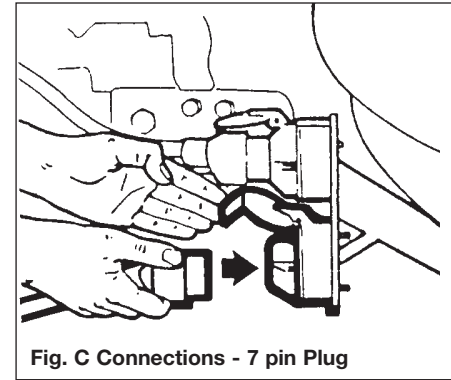
Take hold of the caravan under the rubber gaiter behind the coupling and lift to ascertain whether the caravan is properly attached. (Figs. B & D.)

Lock hitch if possible (see Safety and Security, page 20).

Connect 7 pin plugs to car sockets ensuring there is enough loose cable for cornering. (Fig. C)

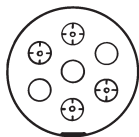
Check all car and caravan roadlights are working. Check round the caravan for anything left behind.

Release caravan handbrake, adjust all mirrors from driving seat and proceed.



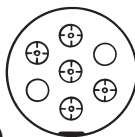
The Towing Code

12N AND 12S VIEWED FROM REAR OF PLUG



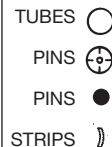
12N (BLACK)

TERMINAL	COLOUR	12N PLUG
1	YELLOW	L/H INDICATOR
2	BLUE	REAR FOG LAMP
3	WHITE	COMMON RETURN (1-7)
4	GREEN	R/H INDICATOR
5	BROWN	R/H SIDE TAIL & No PLATE LIGHT
6	RED	STOP LAMP
7	BLACK	L/H SIDE TAIL & No PLATE LIGHT

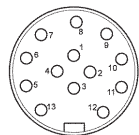


12S (GREY)

TERMINAL	COLOUR	12S PLUG
1	YELLOW	REVERSING LIGHT
2	BLUE	NO ALLOCATION
3	WHITE	NEGATIVE PIN 4
4	GREEN	CONTINUOUS POWER SUPPLY
5	BROWN	NO ALLOCATION
6	RED	FRIDGE
7	BLACK	RETURN FOR FRIDGE

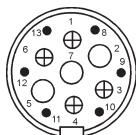


VOLTA/JEAGER & MULTICON FEDER 13 PIN PLUGS (viewed from rear)



VOLTA/JEAGER

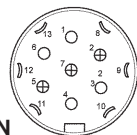
PIN NO	COLOUR	DESCRIPTION
1	YELLOW	LEFT FLASHER
2	BLUE	FOG HAZARD LIGHT
3	WHITE	EARTH FOR 1-8
4	GREEN	RIGHT FLASHER
5	BROWN	RIGHT TAIL LIGHT
6	RED	STOP LIGHTS
7	BLACK	LEFT TAIL LIGHT
8	ORANGE	REVERSE LIGHTS
9	BROWN/BLUE	CAR +
10	BROWN/RED	FRIDGE
11	WHITE/BLACK	EARTH FOR 10
12		NOT YET ALLOCATED
13	WHITE/GREEN	EARTH FOR 9



WEST

PIN NO	COLOUR	DESCRIPTION
1	YELLOW	LEFT FLASHER
2	BLUE	FOG HAZARD LIGHT
3	WHITE	EARTH FOR 1-8
4	GREEN	RIGHT FLASHER
5	BROWN	RIGHT TAIL LIGHT
6	RED	STOP LIGHTS
7	BLACK	LEFT TAIL LIGHT
8	ORANGE	REVERSE LIGHTS
9	BROWN/BLUE	CAR +
10	BROWN/RED	FRIDGE
11	WHITE/BLACK	EARTH FOR 10
12		NOT YET ALLOCATED
13	WHITE/GREEN	EARTH FOR 9

**MULTICON
FEDER 13K**



ROAD LIGHTING

For your information the wiring diagram of the 12N and 12S connectors is shown opposite. These should be checked regularly and if in any doubt a qualified electrician consulted.

Some European cars may be equipped with Volta, Jeager, West or multi-con sockets, an adaptor or replacement sockets may be required. If so consult your dealer or qualified electrician.

The wiring allocations were changed in 1998 and it is important that you check the car to caravan connections are compatible prior to coupling up to the car.

WARNING: Always disconnect the electrical connector between the towing vehicle and the caravan before connecting a low voltage supply to the caravan (mains) and before charging the battery (EN 1648-1).

PASSENGERS

Passengers are forbidden to ride in a caravan with the exception of authorised test personnel.

BRAKES/BREAKAWAY CABLE

A breakaway cable is required for caravans and the device must be such that the caravan stops automatically if the coupling breaks (Regulation 15 of the Road Vehicles [Construction and Use] Regulations 1986).

Always ensure that the breakaway cable is connected to the towing vehicle, not to the towball.

MIRRORS

The driver of the towing vehicle must have an adequate view of the rear.

If there is no rear view through the caravan it is essential that additional exterior towing mirrors are fitted. This is mandatory in some European countries and drivers can face instant fines if extension mirrors are not fitted.

Caution: Any rear view mirror must not project more than 200 mm outside:

- the width of the caravan when being towed.
- the width of the towing vehicle when driven solo.

Note: Any rear view mirror fitted shall be 'e' marked and cover the field of view as stipulated by type approval requirements (Regulation 33 of the Road Vehicles [Construction and Use] Regulation 1986).

PULLING OFF

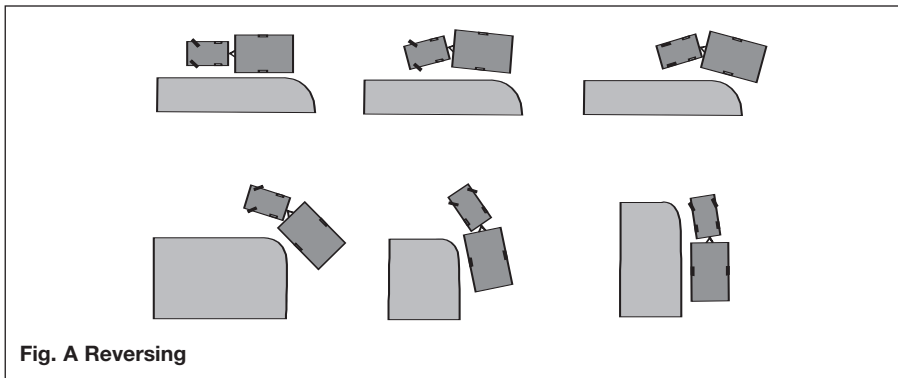
Let the clutch in smoothly.

Allow more engine speed to produce the power to move the additional weight of the caravan.

Reduce wear and tear on clutch and transmission by taking extra care.

Change gears smoothly.

Try not to jerk the clutch.



REVERSING

Proficiency at reversing can only be achieved with practice and should be first attempted in a large open area (Fig. A).

SPEED LIMITS

Normal road towing: 50mph

Motorways (including dual carriageways): 60mph

CARAVAN HANDLING

Allow for caravan being wider than car.

Do not bump kerb with caravan wheels.

When passing other vehicles allow more than the normal clearance for driving solo.

Allow longer to get up speed to pass.

Allow for the outfit being twice its normal length.

Do not suddenly swing out.

Carry out all manoeuvres as smoothly as possible.

Use nearside wing mirror to check caravan has cleared when overtaking.

IMPORTANT POINTS ESPECIALLY FOR MOTORWAY DRIVING

- Caravans may not be towed in the outside lane of a three or four lane motorway. (Reg. 12(2) of the Motorway Traffic [England and Wales] Regulations 1982).

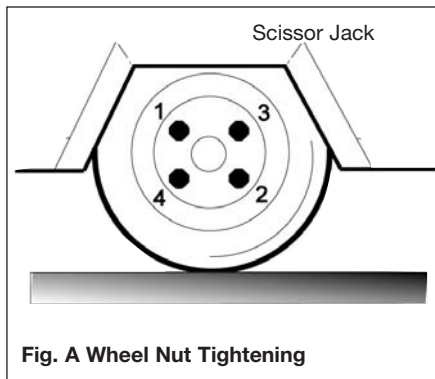


The Towing Code

2. Reduce Speed:
 - i) In high or cross winds.
 - ii) Downhill.
 - iii) In poor visibility.
3. High sided vehicles cause air buffeting so extra care must be taken when passing or being passed. As much space as possible should be given.

CHANGING A WHEEL

1. Leave caravan hitched to towing vehicle and ensure handbrake is applied.
2. Lower corner steadies (as safety measure) on the side that the wheel is being changed to stabilise the caravan.
3. Use wheel brace to slacken off wheel nuts on the wheel to be changed.
4. Position jack under the axle at the appropriate jacking point (see fig. B) or in the side jack socket (see fig. C).
5. Jack up the caravan until the wheel for removal is just off the ground.
6. Remove the wheel nuts, wheel trims and remove the wheel.
7. Fit spare wheel and reverse the above procedure.
8. Tighten all four nuts, according to Fig. A, to 88Nm (65lb/ft) for steel wheels or 115Nm (85lb/ft) for alloy wheels using a torque wrench or have checked as soon as possible.



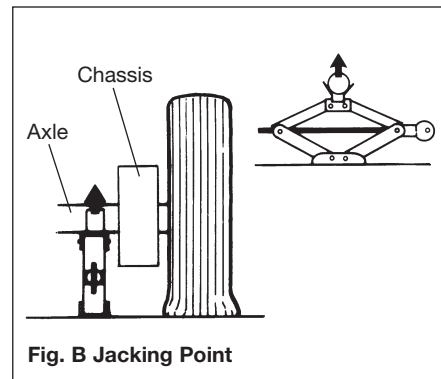
IMPORTANT

When a wheel has been removed and replaced the torque of the wheel nuts should be re-checked after approximately 15 miles of running. (See 8 above).

JACKING POINTS

WARNING: Only jack up your caravan when it is coupled up to the car with its handbrake applied and in 1st gear (engine off).

Ensure that the jack is located in the correct position, i.e. on the axle tube inside the chassis member (Fig. B). The reinforced axle mounting plate can be used as an alternative but the chassis member itself **MUST NEVER** be used as a jacking point.



All caravans are provided with the facility to fit Al-Ko side jacking points and although a scissor or bottle jack may be used, it is recommended that the side mounted Al-Ko Jacking System should be used.

STOPPING ON A HILL

Pulling off again can sometimes present a problem. The easy solution is

- (i) Carry a good sized wedge shaped piece of wood with a rope or light chain attached.
- (ii) Attach the other end of the rope to the nearside rear grab handle.
- (iii) Place the wood behind the nearside caravan wheel.

The Towing Code

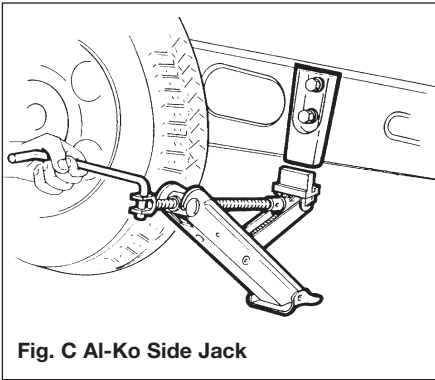


Fig. C Al-Ko Side Jack

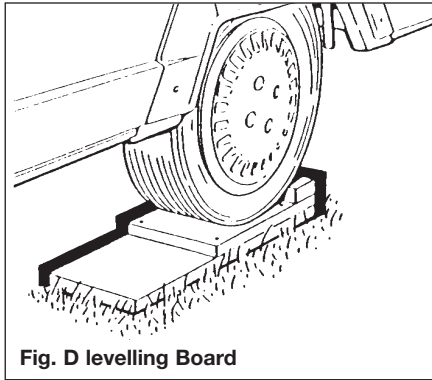


Fig. D levelling Board

- (iv) Carefully reverse the car slightly back down the hill, the caravan will stop against the wedge and turn.
- (v) Drive forward since this attempt to move up the hill will now not involve pulling the full weight of the caravan until the car has gained some traction.

ARRIVAL ON SITE

Note: Check and observe site regulations.

1. Selecting a pitch

Do not pitch in such a position that your outfit will obstruct others coming in.

Try to choose an area which is dry, reasonably level and preferably with a hard base.

If you have no alternative but to pitch on a slope ensure that, for when you leave, you

are facing down the slope.

It is good practice to chock the wheels of the caravan when parked on a slope even though the caravan brakes are applied.

2. Levelling the caravan

Levelling must be carried out in both directions in order for the refrigerator and other equipment to function correctly. This should be done before unhitching the caravan. Levelling boards (Fig. D) can be used to raise one side of the caravan by driving or reversing the caravan onto the boards. Apply the handbrake and chock the wheels.

The positioning of the jockey wheel can be used to help level the caravan.

Lower the corner steadies until they are in

firm contact with the ground. DO NOT use the steadies as a jack they are only a means of stabilising the caravan.

Levelling pads or boards should be used under the steadies where the ground is soft or uneven.

In extreme cases where it is necessary to raise a wheel off the ground for levelling purposes, further adequate support should be applied so that the steadies do not take any undue strain.

Exterior Door

To prevent distortion of the body, the caravan must be always correctly sited and levelled. Failure to site the caravan correctly may prevent the exterior door from closing properly.

3. Unhitching

Apply the caravan handbrake.

Lower the jockey wheel to the ground.

Disconnect the breakaway cable and road lighting plugs.

Operate the handle by depressing the locking button on the lever mechanism and lift the handle upwards and forwards, at the same time winding down the jockey wheel, to assist in lifting the caravan clear of the towing vehicle.

When this operation is complete, replace towball cover.

Park your vehicle alongside the caravan on the offside.





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Safety & Security

FIRE

Important: Your attention is drawn to the notice affixed inside the caravan advising on fire precaution, ventilation and what to do in case of fire.

IN CASE OF FIRE

1. Get everyone out of the caravan as quickly as possible using whichever exit is the quickest, including windows. Do not stop to collect any personal items.
2. Raise the Alarm. Call the Fire Brigade.
3. Turn off the gas supply valve if it is safe to do so.
4. Turn off the electricity supply at supply point.

DICON 300AP SMOKE ALARM

This smoke alarm is approved for use in caravans and mobile homes. (Fig. A)

The National Caravan Council requires that all new or used caravans sold by its members be fitted with a smoke alarm featuring an alarm silence facility.

FEATURES

- Battery operated. No need for mains power wiring.
- Operating Light (LED)
Flashes approximately every 45 seconds confirming unit is powered.

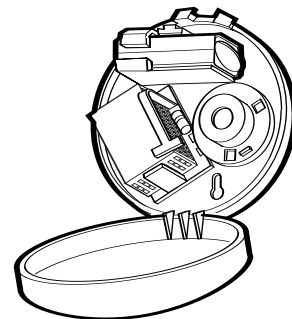
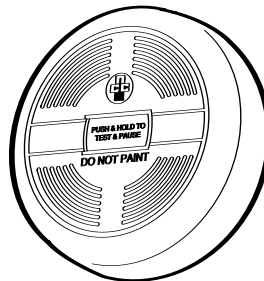


Fig. A Smoke Alarm

- Low Battery Warning
Unit “beeps” approximately every 45 seconds for up to 30 days when the battery needs replacing.
- Sensitivity Test Button
Test sensitivity, circuitry, battery and horn.
- Loud 85 Decibel Piezo Electric Alarm
Automatically resets when hazardous condition has passed.
- Precise Sensitivity
- High Quality Solid State Components

CONNECTING THE BATTERY

Your alarm requires one 9 volt battery to power the smoke detector portion of the unit. Under normal use the battery powering

the smoke detector should last approximately one year.

WARNING: Ensure that batteries are correctly installed. Positive terminal to positive contact (marked +), negative terminal to negative contact. Reversing a battery in its compartment will immediately drain the battery and could damage the smoke alarm.

HOW TO TEST

Press test button until alarm sounds, then release. Repeat test weekly.

Note: Always test smoke alarm operation after vehicle has been in storage, before each trip and at least once per week during use.

Safety & Security

WARNING: The electronic test button provides a full test of the unit's functionality. DO NOT try to test the alarm with a naked flame, as this may present a potential fire hazard.

FALSE ALARMS

Abnormal air conditions may cause the highly sensitive smoke alarm to give a "false" alarm. DO NOT DISCONNECT THE BATTERIES. If no fire is apparent, ventilate the caravan and/or blow fresh air into the unit until the alarm stops. Once cleared the smoke alarm will automatically reset.

MAINTENANCE

Dust can lead to excess sensitivity therefore it is recommended that the unit be vacuumed every 6 months to help keep the unit working efficiently.

Open cover and gently vacuum interior of detector trying to keep the nozzle from touching the unit.

WARNING: Never use portable cooking or heating equipment other than electric heaters that are not of the direct radiant type, as it is a fire and asphyxiation hazard.

FIRE EXTINGUISHER

It is recommended that a 1kg (2lb) minimum capacity dry powder fire extinguisher be

carried inside your caravan at all times.

When using a dry powder extinguisher it is suggested that the caravan be evacuated until the powder has settled, to avoid inhalation.

A fat pan fire should not have a fire extinguisher aimed at it. It should be smothered with a fire blanket.

WARNING: Provide one dry powder fire extinguisher of an approved type or complying with ISO 7165, of at least 1kg capacity, by the main exterior door and a fire blanket next to the cooker. Familiarise yourself with the instructions on your fire extinguisher and the local fire precaution arrangements.

ESCAPE PATHS

It is important that you do not block escape paths to emergency exits with obstructions or hazards.

CHILDREN

Do not leave children alone in the caravan in any event. Keep potentially dangerous items out of reach, as at home e.g. matches, drugs etc.

VENTILATION

All caravans comply with BS EN 721. The ventilation points on your caravan are fixed

points of ventilation which are required by the European Standards.

All caravans have ventilation at high level and low level which have been calculated to suit the individual needs of your caravan.

High level ventilation is achieved by means of the roof lights and washroom roof ventilators. The low level ventilators are positioned underneath the oven housing. All models with sliding doors have two vents located underneath the sliding doors.

Under no circumstances must these vents be blocked or obstructed.

It is advised that fixed ventilation points are checked and cleaned (if necessary) on a regular basis using a small brush and a domestic vacuum cleaner.

Additional night time ventilation is obtained by releasing the window catches and placing them in the second groove. Note the windows are not sealed from rain in this position.

As the ventilation levels are calculated to suit each models requirements there should be no modifications made which may result in reduced ventilation levels.

WARNING: Do not obstruct ventilation.



Safety & Security

Petrol/Diesel Fumes

The fitting of a tail pipe to your car exhaust will reduce the possibility of fumes entering your caravan through the ventilation points.

Note: Never allow modification of electrical or LPG systems and appliances except by qualified persons at an authorised Swift Group dealership.

SECURITY

Caravan theft

The theft of a caravan can occur in the most unlikely circumstances; from a motorway service area, even from an owner's driveway.

Secure all windows and doors when your caravan is unoccupied even if only for a short length of time.

Chassis number

Record your caravan chassis number which can be found on the **front offside section of the drawbar (Fig. A) or any of the eye level windows.**

Make a note of this number in the space provided at the front of this handbook and make separate note of the number to keep safe at home.

Additional security

Consider fitting any device which might deter or prevent intrusion by thieves.

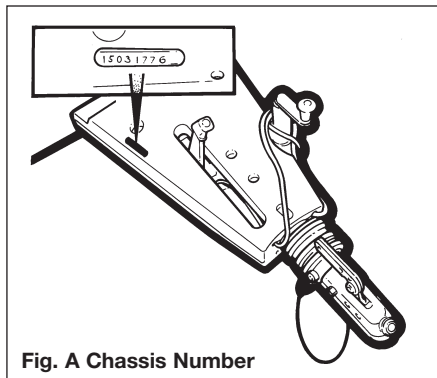


Fig. A Chassis Number

A hitch lock cover prevents towing of the caravan.

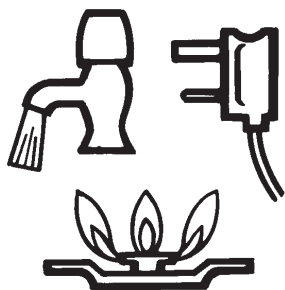
A wheel lock prevents towing of the caravan and removal of the wheel.

Customers are advised to identify their caravan with a method for subsequent identification if other forms of identification have been altered or removed.

Free crime prevention advice about securing your caravan, protecting your valuables, property marking, either at home or whilst on site, can be obtained from the Crime Prevention Officer through your local Police Station.

SECURITY CHIPS

A special security chip is concealed within the body of every caravan. This chip contains the individual identity of your caravan and can only be read by using a special decoder. Your local police can obtain the use of a decoder by contacting C.R.I.S. on telephone no: 01722 411430



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Services

Connection of services is dealt with under the separate headings.

In all cases users should become familiar with the equipment manufacturers' instructions.

Advice and leaflets, if not supplied with the caravan, can be obtained from the suppliers of the equipment.

Before making connections of any description to the caravan or its equipment, ensure that ALL equipment is turned off.

The caravan can use three separate systems for its water supply.

1. Inboard water tank (for winter use essential).
2. External water carrier.
3. Watermaster Aqua Source (mains water).

WHALE WATERMASTER SYSTEM

Fresh water is supplied to the caravan from an external water container by the Whale Watermaster system, which consists of a socket in the offside exterior wall of the caravan and a separate plug-in pump assembly.

The wall socket is protected by a hinged lid which should be kept shut when the pump is not connected. Never tow the caravan with the lid open. The lid is easily opened by gripping the lower edge and pulling outwards.

To operate the system from the external pump, switch the pump control switch on the electrical panel to external position.

The system will operate as a normal micro-switched system when the taps in the bathroom or kitchen are opened.

INBOARD WATER TANKS AND ON-LINE WATER SYSTEMS

To fill the inboard/underslung tank from an external container follow these simple instructions:

1. Insert water master pump into container.
2. Plug pump hose connection into water master socket.
3. Ensure the inline stem shut off valve is in the open position. This is located adjacent to the tank or T-connector feeding the tank.
4. On control panel located inside caravan, switch on external pump and the rocker switch above the electrical panel or in the battery compartment, dependant on model. Turn ON the Pump Run switch and the tank will fill.
- 5a. Automatic shut-off will take place when the tank is full (some models) or
- 5b. When water starts to flow from overflow on underside of caravan, or when the container is empty, pull out pump hose

connection immediately and turn off switch.

6. On control panel located inside caravan, switch to internal pump and turn on a cold tap for a few seconds to relieve pressure in the tank.

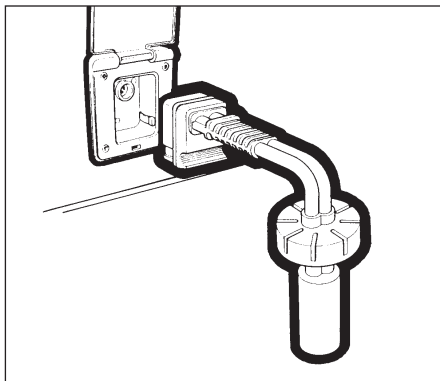
To use an on-line water system ("Aqua-Source") with an inboard/underslung tank, isolate the tank facility by turning the in-line stem shut-off valve to the OFF position.

Note: It is advisable to check the system for leaks on the first occasion using an on-line water system as they work at slightly higher pressure than pump systems.

The internal and external pumps should NOT be switched on when an on-line pressure system is plugged into the caravan.

WARNING: It is not recommended to tow with water in the onboard or underslung water tank as this could affect stability.

To drain the underslung water tank, reach under the floor and unclip the drain hose, feed the pipe through the chassis holes (if required) to ensure the pipe has a natural fall and open the tap on the end of the drain hose



WHALE AQUA-SOURCE

To use an on-line water system ("Aqua-Source") with an inboard tank.

Note: It is advisable to check the system for leaks on the first occasion using an on-line water system as they work at slightly higher pressure than pump systems.

The internal and external pumps should **NOT** be switched on when an on-line pressure system is plugged into the caravan.

WHALE SUPERSUB SYSTEM

The separate plug-in pump assembly consists of a Whale Supersub pump, hose and plug. The plug provides connection of both water supply to the caravan and 12V dc electric power to the pump. A dust cover is

fitted to the connecting dual hose to prevent contaminants falling into the water container.

The Whale Supersub pump is a completely sealed unit designed for intermittent use. It is NOT self-priming and therefore to ensure proper performance, the pump **MUST ALWAYS** be fully submersed in water **BEFORE** plugging into the wall socket.

Initial connection to fresh water supply

1. Fill the fresh water container and place it alongside the Whale wall socket located in the offside external wall of the caravan.
2. Ensure the pump isolator switch at the control panel inside the caravan is switched OFF.
3. Open the 'hot' kitchen tap. Ensure all other taps are closed.
4. Place the Whale Supersub pump into the water container outside the caravan, taking care to ensure the pump reaches the bottom of the container.
5. Lift the lid of the Whale wall socket and fit the pump assembly plug into the socket. Ensure it is pressed in fully.
6. Adjust the dust cover to fit over the opening in the water container to keep contaminants out.
7. Switch ON the pump isolator switch at the control panel inside the caravan.
8. Wait until water flows freely from the 'hot'

kitchen tap. Allow to flow for a few more seconds to ensure release of any trapped air in the water system, then turn the tap off.

Repeat the same procedure with the 'cold' kitchen tap.

After turning off the taps, check 'pump running' light at the control panel.

If light is OFF — the system is ready for use.

If the system has been drained, the above procedure **MUST** be repeated **EVERY** time the water container is filled.

Leave the pump isolator switch at the control panel ON.

Once a tap is turned on, the pump is activated automatically by a micro switch.

Fault Finding

1. **Pump runs very noisy but does not pump water.** Likely to occur after water container has been refilled. Pump is air locked. Cure: unplug from socket allowing pump to flood, and reconnect by plugging in again. The correct sequence when refilling the container is to unplug, replace pump in container, then reconnect.
2. **Pump does not run at all.** If not due to blown fuse or faulty connections, then most likely cause is excessive continuous running. Cure: replace pump.

Never allow the pump to run dry.



Services

Never allow the pump to run continuously for more than 15 minutes.

Note: When refilling the water container, the pump assembly may be left unplugged into the wall socket so that the pump can be kept off the ground by inserting the hose into the groove on the underside of the plug. But, the pump assembly **MUST** be unplugged **BEFORE** replacing the pump into the refilled water container.

WHALE 'ELITE' MICROSWITCH TAPS

The micro switch taps are used when the water supply is not pressurised.

When the tap is turned on the micro switch (which is fitted inside the tap) activates the pump to supply water.

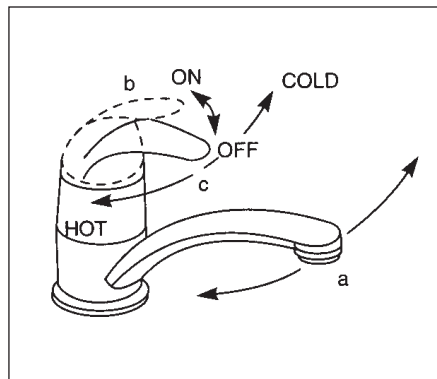
Operation

Swivel the tap spout (a) to the desired position over the sink, lift the control lever (b) to activate the pump and allow water to flow simultaneously. To adjust the temperature swivel the lever (c) to the left or right as shown opposite.

Cleaning

It is recommended that a non-abrasive damp cloth is used for cleaning the Elite Tap/Shower.

Microswitch Replacement: A microswitch replacement kit is available (ref. MT8000).



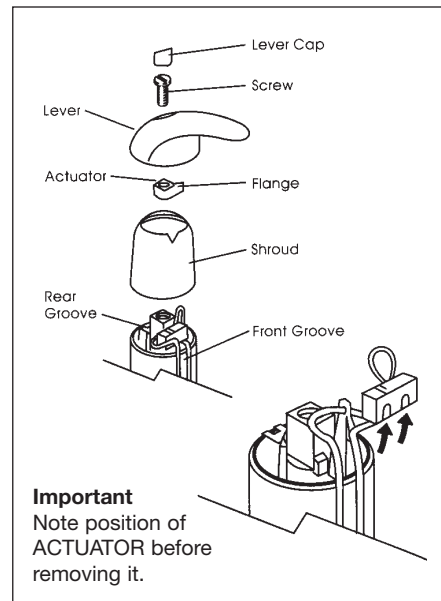
Note: Before commencing microswitch replacement ensure instructions are read through thoroughly. The entire process can be completed without the need to remove the tap from the worktop.

Before you Start

1. Ensure pump is isolated.
2. Position lever in central, i.e. mixer, off location.

Microswitch Replacement

1. Carefully remove lever cap. A recess at the back of the lever cap is provided to assist with this.
2. Remove screw with No. 2 Pozzi screwdriver. Note the position of the lever at this stage.



3. Lift off the lever.
4. Note the position of actuator before removal. Flange should be facing forward.
5. Remove actuator.
6. To remove shroud, squeeze clips with one hand and slide shroud off with other hand.
7. Remove microswitch, using finger and thumb, pull up and outwards.

8. Slide wire terminals off microswitch.
9. Attach replacement microswitch and relocate. Note: Ensure microswitch snaps fully home.
10. Before relocating shroud ensure wires are neatly located in the front groove as shown.
11. Replace shroud. Note: Ensure shroud locating rib is aligned with the rear groove of tap and snap fully home, ensuring clips are retaining the shroud.
12. Replace actuator in position noted in 4 above.
13. Replace lever and fix with screw.
Note: Do not overtighten screw.
14. Replace lever cap.

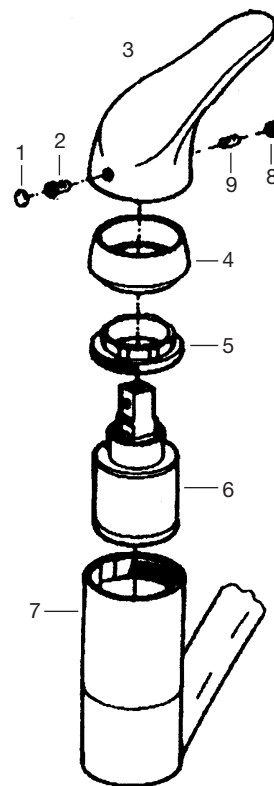
Winterising

To avoid damage as a result of freezing, drain the entire water system. To protect Elite tap or shower units, the tap control(s) and the shower control should be opened when draining the system to enable stored water in the outlets to drain back through the control valves and out of the system. (Switch off pump at isolator). Ensure that both the hot and cold systems are fully drained by draining separately. The cold drain plug is a separate drain plug from the heater drain plug. The lever should be up and in the centre to drain the hot and cold system when not in use. Remove water filter if fitted. Please consult your dealer if in difficulty.

If they are unable to solve the problem, contact Whale Customer Services:
tel: 01247 270531 ext. 211 or 213.

REICH 'CHARISMA' SINGLE LEVER MIXER TAP

1. Detach cover (1)
2. Loosen screw (2) inside the handle
3. Detach the handle (3)
4. Turn out the rosette (4)
5. Turn out the brass nut (5) with spanner SW 29
6. Pull out the ceramic cartridge (6)
7. If the cartridge is defect please install a new one
8. If the micro switch is defect please pull the wire out of the mixer (7)
9. Detach the cover (8) in front of the handle
10. Loosen screw (9) inside the handle and pull-out the micro switch
11. Install cartridge, micro switch, brass nut, rosette and handle in the opposite way



Reich Charisma

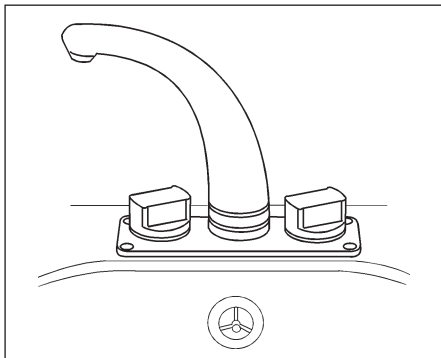


Services

WHALE 'ELEGANCE' MICROSWITCH MIXER TAPS

The microswitch taps are used when the water supply is not pressurised.

When the tap is turned on, the microswitch (which is fitted inside the tap), activates the pump to supply water.



Operation

Swivel the tap spout to the required position over the sink and turn on either the hot or cold tap to activate the pump and allow water to flow. To adjust the water temperature, open both taps to the required mix.

Cleaning

It is recommended that a non-abrasive damp cloth is used for cleaning the Elegance tap.

Microswitch replacement

Before you start:

- Ensure the pump is isolated.
 - Ensure the taps are in the OFF position.
1. Remove the crimp terminals.
 2. Hold the sides of the microswitch clip with your thumb and finger and gently pull off the clip.
 3. The microswitch should slide off the two retaining pins. Be careful not to break the pins off (see fig. 1).
 4. Replace in the reverse order.

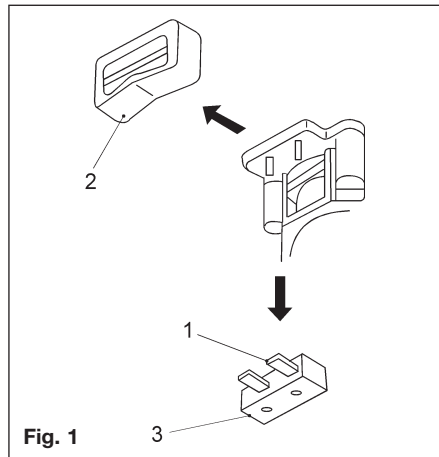


Fig. 1

Dismantling the taps for maintenance

1. Pull off knob(s) and spindle(s).
2. Unscrew securing screw(s), using a 17mm (11/16") spanner.
3. Control unit(s) can now be released for inspection (see fig. 2).

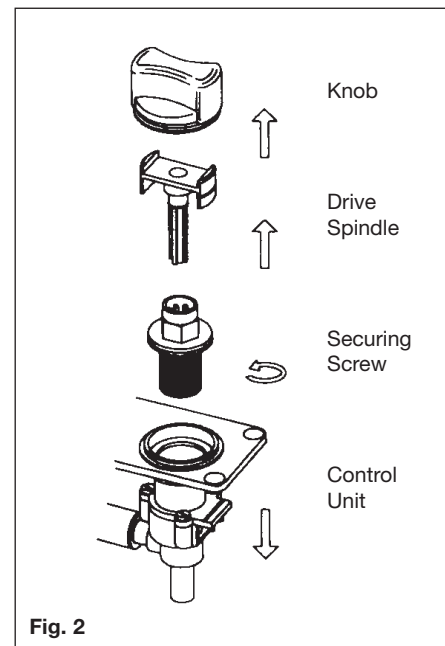


Fig. 2

WINTERISING

To avoid damage as a result of freezing, drain the entire water system. To protect Elegance Tap or Shower units, the tap control(s) and the shower handset on/off control should be opened when draining the system to enable stored water in the outlet to drain back through the control valves and out of the system (switch off pump at isolator). Ensure that both the hot and cold systems are fully drained, the cold drain plug is a separate drain plug from the heater drain plug. Tap spouts and shower heads should be unscrewed, removed and stored in a dry place. Please consult your dealer if in difficulty. If they are unable to solve the problem, contact Whale Customer Services on 01247 270531 ext. 211 or 213.

WARRANTY

Whale products are guaranteed for 1 year from the date of purchase against defects in materials and workmanship. If the unit proves faulty, return it to your supplier with proof of purchase and purchase date. Please note that frost damage is not a valid warranty claim.

The manufacturer retains the right to repair or replace the unit. The manufacturer cannot be held responsible for claims arising from incorrect installation, unauthorised modification or misuse of the product. The above does not affect your statutory rights.

GAS

GENERAL INFORMATION

Gas Bottles

Bottled Liquified Petroleum Gas (LPG) is the most convenient portable source of fuel for your caravan.

Make sure that heating and cooking appliances and the gas cylinders are switched off before you move the caravan.

Regularly check flexible gas hose, joints and connections for tightness. Finally make sure that each gas appliance is working efficiently to the recommendations of the appliance manufacturers.

The regulator

The regulator (Fig. B) is a governing device which adapts the bottle pressure to one that suits the equipment in the caravan.

Note: Regulator valves should always be in the 'OFF' position when towing.

WARNING: Some industrial LPG appliances operate at high pressure and require a 'high pressure' regulator. This often has an adjusting handle on it. NEVER use such a regulator on a caravan.

Propane and Butane gas regulators are not interchangeable.

Cylinders and regulators are also not

interchangeable between different makes of gas cylinder.

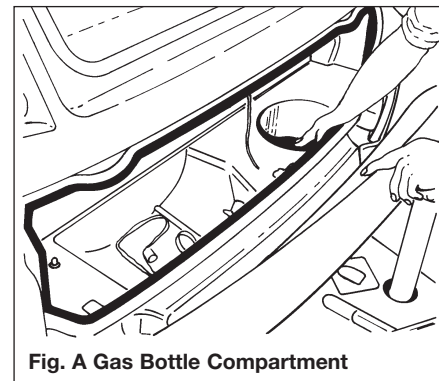


Fig. A Gas Bottle Compartment

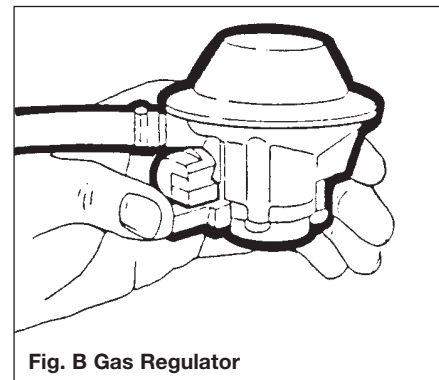


Fig. B Gas Regulator



Services

Hoses

Hoses should be made from Neoprene and should conform to BS 3212. Rubber hosing should never be used. It is good practice to replace hoses annually, and a jubilee clip is a worthwhile addition to prevent accidental removal of the hose.

WARNING: Inspect flexible gas hose regularly for deterioration and renew, as necessary, with the approved type. In any case the hose should be renewed not later than the expiry date marked on the hose. Flexible gas hose length should not exceed 400mm.

WARNING: Ensure hoses do not become entangled in door mechanism.

TYPES OF GAS

Butane

Butane is supplied in the U.K. in green, blue or aluminium bottles.

All these have a male left hand thread EXCEPT for Camping Gaz which has a special female right hand thread and Calor 7kg and 15kg and aluminium bottles which have a special clip-on connection.

A 7kg bottle is recommended for butane gas.

Continental bottles usually have a male left

hand thread similar to but not identical with U.K. butane.

Butane is suitable for use at temperatures down to 2°C but will not work below that.

Propane

Propane is supplied in Red, or partly red bottles which have a female left hand threaded connector.

Scandinavian countries use the same connector.

Germany and Austria supply propane with a male connection.

Propane will work at temperatures as low as -40°C and is therefore suitable for all winter caravanning.

A 6kg bottle is recommended for propane gas.

GAS SAFETY ADVICE

WARNING: If you smell gas or suspect a leak and if it is safe to do so, isolate the gas appliances and turn off the gas bottles at the regulator. Evacuate the caravan and ventilate. Seek professional advice as to the cause of the leak.

Facts about LPG

LPG is not poisonous.

Bi-products are harmless.

There is danger if all air and oxygen were excluded.

(Ventilation holes must be kept clear at all times).

LPG has been given a smell by the manufacturers in order to identify leaks.

Awning Spaces LPG Appliance Exhaust

There is no danger of pollution of an enclosed awning space by the LPG exhaust from a refrigerator venting into it, as awning spaces are generally well ventilated.

Space heaters may produce sufficient exhaust to pollute the awning space, if it is totally enclosed, from a general comfort, smell and hygiene point of view. In the extreme case there could be a build up of carbon dioxide to a dangerous level.

Caravan owners are advised to allow some fresh air circulation in the awning space when such appliances are in use.

PRECAUTIONS

- a) Never look for a leak with a match. Always use a soap solution or its equivalent when testing connections. Do not operate any electrical apparatus whatsoever, especially light switches. If the leak is not obvious, the caravan should be evacuated and qualified personnel consulted.
- b) Avoid naked lights when connecting or changing a cylinder.

- c) Check the flexible hose frequently.
- d) The gas is heavier than air and therefore sinks to the lowest point.
- e) Keep bottle gas containers outside (and protected against frost). If they must be kept inside make sure they are well away from heat.

Ventilation

All ventilation complies with BSEN 721 and vents should not be obstructed in any manner as this could lead to insufficient fresh air. In this case the confined atmosphere becomes depleted of oxygen which leads to the formation of the highly poisonous gas 'carbon monoxide'. Carbon Monoxide is odourless, colourless and tasteless and will rapidly cause unconsciousness and death with little or no warning prior to collapse. THERE IS NO DANGER WHEN ADEQUATE VENTILATION IS PROVIDED.

Roof-mounted Flue installations

All flue installations should be inspected once a year throughout their length for corrosion. Flues should be replaced if any sign of perforation is found. Ensure that the replacement is of an approved type.

CONNECTION

Ensure that the gas regulator is correctly connected to the gas cylinder in gas bottle compartment and that the hose is tight. Before turning on the gas supply, ensure that

all gas operated equipment in the caravan is turned off.

All gas equipment is supplied through a central Gas Manifold System which has individual isolation taps for each appliance, as follows:

- RED - Cascade Water Heater
- WHITE - Space Heater
- BLUE - Fridge
- GREEN - Hob & Oven (combination)
- GREEN - Hob (Separate)
- YELLOW - Oven (Separate)
- YELLOW - Barbecue (if fitted)

Thermal insulation heating

Your caravan has been designed to achieve a thermal insulation and heating level for specific climatic conditions. The classifications are as follows:

GRADE 1

A caravan with an average thermal transmittance (u) that does not exceed $1.7\text{w}/(\text{m}^2\text{k})$.

GRADE 2

A caravan with an average thermal transmittance (u) that does not exceed $1.7\text{w}/(\text{m}^2\text{k})$ and which can achieve an average temperature difference of at least 20k between inside and outside temperatures when the outside temperature is 0°C .

GRADE 3

A caravan with an average thermal transmittance (u) that does not exceed $1.2\text{w}/(\text{m}^2\text{k})$ and which can achieve an average temperature difference of at least 35k between inside and outside temperatures when the outside temperature is -15°C .



Services

ELECTRICITY

As with electricity in the home, care must be exercised when handling mains electricity.

Your attention is drawn to the following notice as laid down by the Institute of Electrical Engineers.

INSTRUCTIONS FOR ELECTRICITY SUPPLY

On arrival at caravan site

1. Before connecting the caravan installation to the mains supply, check that
 - (a) both 12N & 12S plugs and hitch have been disconnected from the towing vehicle,
 - (b) the mains supply is suitable for your installation and appliances, i.e. whether it is a.c. or d.c. and whether it is at the correct voltage and frequency,
 - (c) your installation will be properly earthed. Never accept a supply from a socket outlet or plug having only two pins, or from a lighting outlet, and
 - (d) any residual current device (earth leakage circuit breaker) in the mains supply to the caravan has been tested within the last month.

In case of doubt, consult the site owner or his agent.

2. **MAKE SURE THAT THE SWITCH AT THE SITE SUPPLY POINT IS OFF.**

3. Lift the cover of the electricity inlet provided on the caravan, and insert the connector of the supply flexible cable.
4. Remove any cover from the socket outlet provided at the site supply point, and connect the plug at the other end of the supply flexible cable to this. Switch on the main switch at the site supply point.

Note: Use mains cable fully uncoiled and protect from traffic.

IT IS IMPORTANT THAT THE MAIN SWITCH AT THE SITE SUPPLY POINT SHOULD BE SWITCHED OFF, THE SUPPLY FLEXIBLE CABLE DISCONNECTED, AND ANY COVER REPLACED ON THE SOCKET OUTLET AT THE SITE SUPPLY POINT BEFORE DISCONNECTING THE FLEXIBLE CABLE FROM THE CARAVAN. IT IS DANGEROUS TO LEAVE THE SUPPLY SOCKET OR SUPPLY FLEXIBLE CABLE LIVE.

Because touring caravans are generally left unused for long periods in the open, it is strongly advised that the mains installation is inspected periodically to ensure that it is safe to use. The IEE Wiring Regulations recommend that mains installations in touring caravans are re-inspected every 3

years by a qualified person (see list) who should sign and issue a periodic inspection report. (The manufacturer recommends annual inspections).

Suitably qualified persons acceptable to the NCC to sign and issue inspection and completion certificates are:

- an approved contractor of the National Inspection Council for Electrical Installation Contracting* or
- a member of the Electrical Contractors' Association
- a member of the Electrical Contractors' Association of Scotland
- a qualified person acting on behalf of the above (in which event it should be stated for whom he is acting).

**The names and addresses of Approved Contractors in any locality (there are over 10,500 in the UK) can be obtained from Electricity Shops, or direct from:*

NICEIC
Vintage House
37 Albert Embankment
London SE1 7UJ

Telephone: 0171 582 7746

The names and addresses of members of the Electrical Contractors' Associations can be obtained direct from:

ECA
Esca House
Palace Court
London W2 4HY

Telephone: 0171 229 1266

ECA of Scotland
23 Heriot Row
Edinburgh EH3 6EW

Telephone: 0131 225 7221

WARNING: CURRENT CONSUMPTION IN THE CARAVAN MUST NOT EXCEED 16 AMPS OR THE PITCH PERMITTED MAXIMUM IF THIS IS LESS THAN 16 AMPS.

IT IS DANGEROUS TO ATTEMPT MODIFICATIONS AND ADDITIONS YOURSELF. LAMPHOLDER—PLUGS (BAYONET-CAP ADAPTORS) SHOULD NOT IN ANY CIRCUMSTANCES BE USED.

CAUTION

The Fanmaster has the potential to draw 8 amps at 2kW. A primus heater has a potential drain of 3kW/13amp. It is, therefore, advisable to check the supply rating before switching on two loads

(items) greater than the supply as this may cause an overload and the circuit breaker to trip.

OVERSEAS CONNECTION

Note: Connection to a mains voltage supply OVERSEAS requires particular attention.

Care must be taken when connecting supplies abroad since the supplies can be of REVERSE POLARITY.

The significance of REVERSE POLARITY is that when equipment is switched off it may not be electrically isolated.

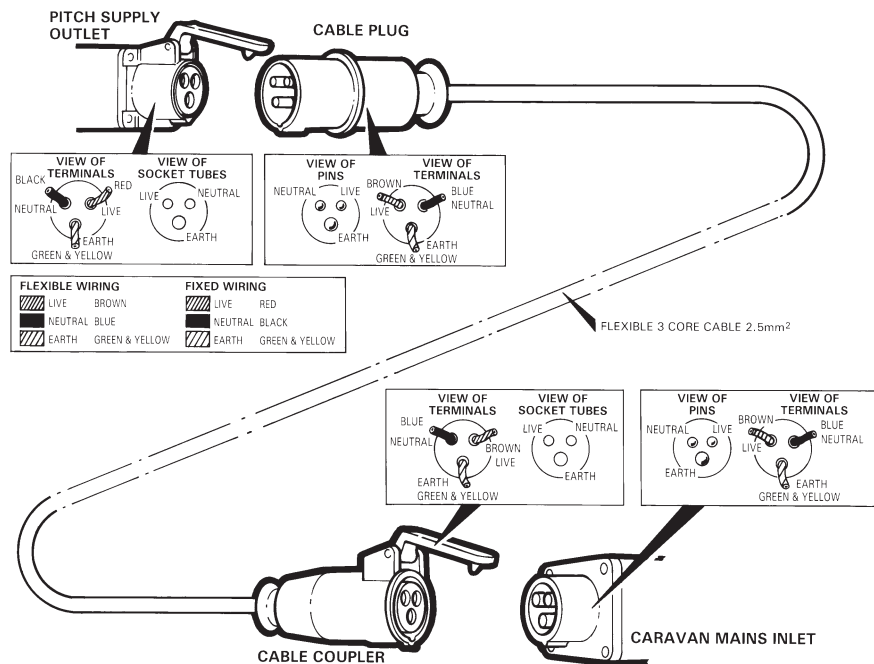
The only certain way of making equipment safe is to unplug it.

It is useful to have a means of checking polarity of the mains supply, especially when touring overseas. There are available several proprietary makes of equipment for testing polarity.

If it can be achieved, it is preferable to connect live to live, and neutral to neutral to maintain full electrical protection.

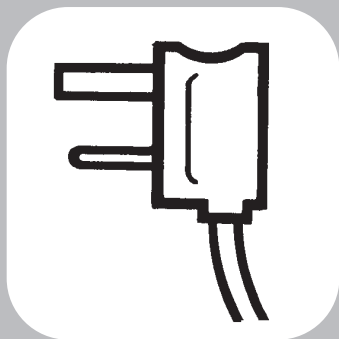


WIRING OF CONNECTING CABLE AND CARAVAN MAINS INLET



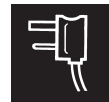
WARNING

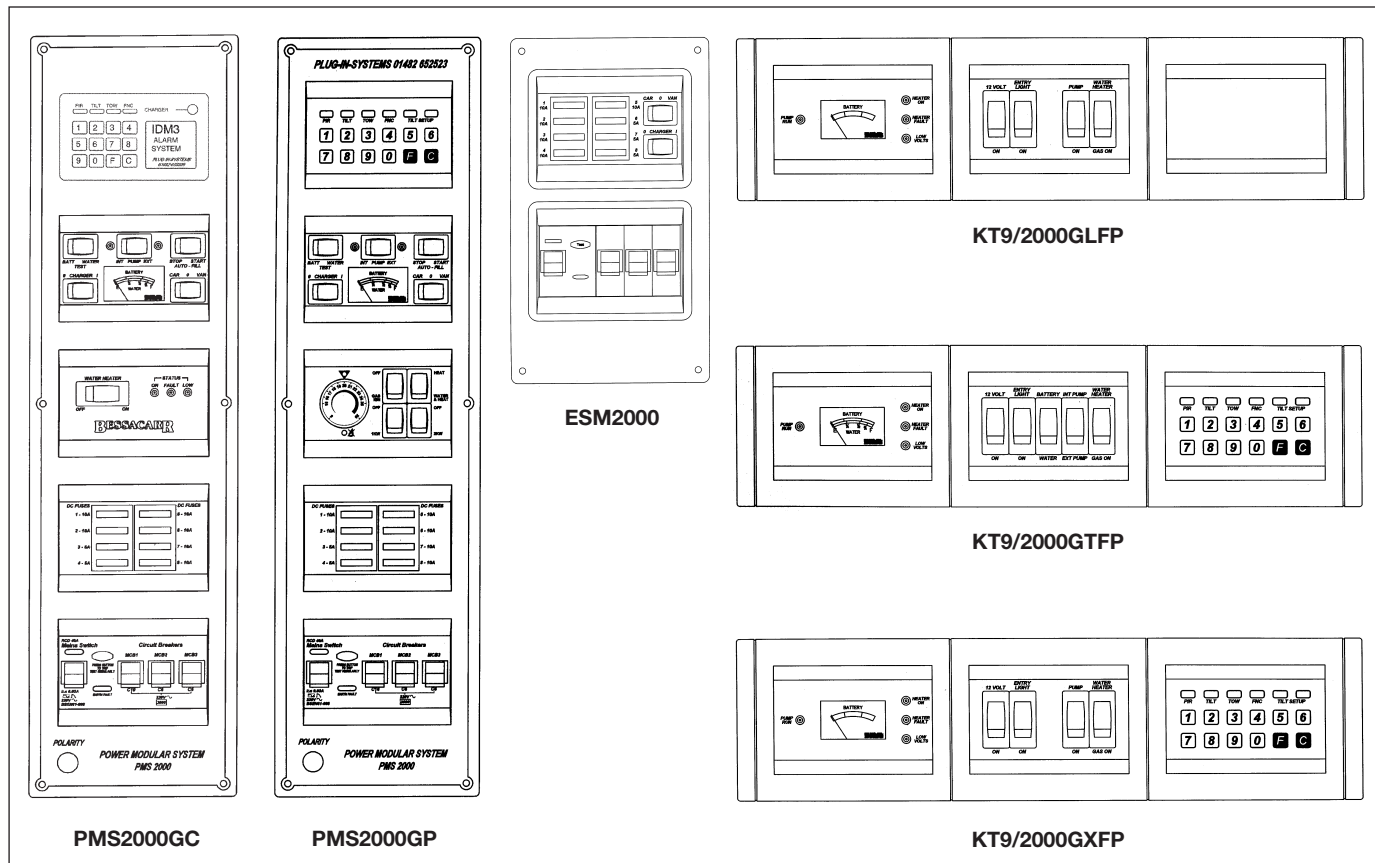
IT IS ESSENTIAL THAT CONNECTIONS ARE MADE EXACTLY AS SHOWN. IF TERMINAL MARKINGS ARE NOT IN ACCORDANCE WITH THE DIAGRAM THEY MUST BE IGNORED. IF IN DOUBT CONSULT A QUALIFIED ELECTRICIAN.
THE LEGAL LENGTH OF THE MAINS INLET CABLE IS 25 ± 2 METRES. WHEN IN USE IT MUST BE FULLY UNCOILED AND PROTECTED FROM TRAFFIC.



ELECTRICAL EQUIPMENT

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POWER MODULAR SYSTEMS- PMS2000GC and PMS2000GP

The Power Modular System is a 240 volt ac and 12 volt dc power control unit. It provides all the necessary features for control of the electrics and security in a caravan. The unit provides the following features:

Mains 240v ac - Mains Module

- with • Earth leakage protection
- Overcurrent protection (RCD)
- Reverse polarity indication

12 volt dc - Fully Automatic Transformer/Charger

- with • Overcurrent protection
- Short circuit protection

Alarm Module

- with • Programmable keypad
- Motion sensor
- Tilt sensor
- Tow vehicle detection
- F.N.C.

Indicator Module

- with • Battery/water test switch
- Battery charger switch
- Water pump switch (Int./Ext.)
- Internal and External “Pump Running” indicator lights
- Water auto-fill switch
- Car/Van battery switch
- “Pump Running” indicator
- Heater 'ON', heater “fault” and “low voltage” indicators (GC only)

Switch Module

- with • Battery charger switch
- Car/Van battery switch
- Water pump switch (Int./Ext.)
- Battery/Water Test Switch
- Water heater switch
- Water/Water & heating switch
- Ignition 'ON' switch
- 1kW switch
- 2kW switch

Fuse Module

- with • 8 fused dc output circuits

UNIT DESCRIPTION

Mains Module

The PMS2000 and PMS2500 is designed to operate on a mains supply of 207-253 volts ac (making it ideal for use with low continental voltages). The 40 amp RCD (Residual Current Device) gives protection against earth faults and also acts as the main switch. The mains module also has three MCB's (Miniature Circuit Breakers) which are basically resettable mains fuses, to protect against overcurrent. Allocation of the MCB's is as follows:

- MCB1 - Sockets/Fan Master (if fitted)
- MCB2 - Cascade/Lights (if fitted)
- MCB3 - Fridge/Charger

Polarity Indicator

This red neon light mounted below the mains module will illuminate if the mains input to the unit has become reversed and will require

correction. Note: this indicator may illuminate whilst using certain generators, this is quite normal and safe.

Using a generator

When using a generator in conjunction with the PMS the following must be observed, failure to do so may result in damage to the unit:

- Always start the generator with the mains isolator in the caravan turned OFF.
- Allow the generator to warm up for a few minutes before energising power in the caravan, as the output voltage can be higher when cold.
- Check the generator output voltage regularly to ensure it is within the specification of the PMS system (i.e. 230 volts $\pm 10\%$).

Transformer/Charger

The PMS2000 employs a fully automatic mains to 12 volt dc transformer and battery charger, able to operate with a wide range of input voltages and provide a stable output voltage even under load. The unit can provide up to 12 amps maximum, after which it will begin to shut down to protect itself.

Battery/Water Level Meter (PMS2000GC and PMS2000GP)

This meter indicates the amount of fresh water remaining in the inboard water tank



Electrics

and battery voltage. To check the water contents simply press the test switch to the water position and the meter will display a level on the following scale:

Empty - $\frac{1}{4}$ - $\frac{1}{2}$ - $\frac{3}{4}$ - Full

To test battery voltage simply press the test switch to the battery position, readings should be taken as follows:

- Green region - Fully charged (no charge necessary)
- Yellow region - Adequate charge (re-charge if desired)
- Red region - Low charge (turn on charger switch to re-charge)

Modules have a water pump running indicator light.

Cascade/Pump Indicators

This module provides indicators for the Cascade water heater fitted in your caravan. The three indicators show the following:

- Green LED - Heater is switched on
- Red LED - There has been a heater fault, probably a low gas supply
- Yellow LED - DC voltage supply is too low for the heater to operate

Also included is a pump running indicator. This red indicator will light up as a warning when the water pump has been activated for either INT or EXT pumps.

SWITCH MODULE

This module contains the control switches for electrical facilities within the caravan.

Pump switch

This switch merely energises whichever pump is required (i.e. internal or external). On the panels there are two indicator lights to show which pump is running.

Car/Van selector switch

The car/caravan changeover switch provided in this module should be used in the following way:

Caravan position

When in this position dc power is available from the caravan battery to power all 12 volt electric circuits. If the charger is switched on, the caravan battery will be charged up via the charger/transformer unit.

Central position

When in this position with the charger switch on, power is provided to all 12 volt circuits via the charger/transformer only. With the charger off, all dc circuits are isolated. Note: The switch should be placed in this position when the van is being towed.

Car position

The switch can be placed in this position should the caravan battery become discharged and no mains power is available. Note: First of all the towing vehicle should be electrically connected to the caravan via the 12S socket.

Battery/Water test switch

This switch should be pressed to the battery position to test battery voltage or the water position to indicate the water remaining in the inboard tank.

Auto-fill Water System

The system controls the automatic filling of the internal fresh water tank from an external pump.

The Auto-fill water system is controlled by two switches:

1. A start and stop switch sited in the PMS2000 indicator module.
2. A manual override switch sited on the control box positioned near the fresh water tank.

Operation

The process begins when the Start-Stop switch is briefly pressed at the side marked 'Start', thus starting the external pump, the process can be stopped at any time by briefly pressing the Start-Stop switch at the side marked 'Stop'. The pump will run for approximately 3 minutes or until the fresh water tank is full, at which point the External pump will automatically stop.

Manual Override:- If the Automatic filling is not required, an override switch has been included on the Auto-Fill unit, situated near the internal fresh water tank.

This switch has three positions:-

Auto = Automatic Filling system active.

Off = Off.

Man = Manual Override, in this position the External pump will be on and will stay on until the switch is moved to the Off or Auto positions.

Charger switch

When the caravan battery requires charging, press this switch to the on position (it should then illuminate). Also ensure the Selector Switch is in the van position.

Heater switch (GC only)

This switch energises the Carver water heater. When switched to the on position, the green indicator marked heater on should illuminate.

Heating and Water

See Primus Aquaflex instructions. (Page 63)

Fuse Module

Eight fuses are provided in this module to protect all dc circuits, the fuse allocation is shown below. Fuses must be replaced only with the specified values.

- Fuse 1 - Front roof lighting
- Fuse 2 - Rear roof lighting
- Fuse 3 - Fanmaster
- Fuse 4 - Radio
- Fuse 5 - 12v sockets/Hitchlight/TV amp
- Fuse 6 - Fan circuits
- Fuse 7 - Water pumps/Water sensor
- Fuse 8 - Ignitions

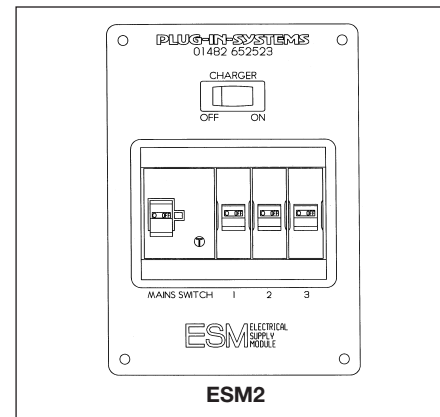
SPECIFICATION

Mains Input	230 volts +15%, -20% ~ ac
Frequency	50Hz
Output voltage	13.8 volts DC
Output current	12 amps (max)
Battery recommended	Re-chargeable lead-acid 12 volt battery, 6 cells, leisure type. 60 ampere- hours minimum
Dimensions	
Height	444mm
Width	102mm
Depth	230mm (max)
Weight	3.2Kg

Product Support

Plug-In-Systems Ltd offer the customer an On-Site Service, available for both Warranty and Non-Warranty repairs (on the CEC and Plug-In-Systems range of equipment only). If you would like to take advantage of this service then please ring Plug-In-Systems (direct) on:

HULL (01482) 659309
and ask for PRODUCT SUPPORT



ESM 2 ELECTRICAL SUPPLY MODULE

The ESM 2 Electrical Supply Module from Plug-In-Systems Ltd is a 240V mains and 12V DC power supply unit, providing all the necessary features for supply of electric in your caravan. The unit provides the following important features.

Connections

Plug & socket input/outputs

Mains 240V AC

Mains module with
Earth leakage protection (RCD)
Overcurrent protection (MCBs)



Electrics

12V DC

Fully automatic transformer/charger with
Overcurrent protection
Short circuit protection
Charger on/off switch

UNIT DESCRIPTION

Mains Module

The ESM 2 is designed to operate on a mains supply of 185-265 volts ac (making it ideal for use with low continental voltages). The 40 amp RCD (Residual Current Device) gives protection against earth faults and also acts as the main switch.

The mains module also has three MCBs (Miniature Circuit Breakers) which are basically resettable mains fuses, to protect against overcurrent. Allocation of the MCBs is as follows:

MBC1- Sockets/Fanmaster (if fitted)
MCB2- Cascade/Lights (if fitted)
MCB3- Fridge/Charger

TRANSFORMER/CHARGER

The ESM 2 employs a fully automatic mains to 12 volt dc transformer and battery charger, able to operate with a wide range of input voltages and provide a stable output voltage even under load.

The unit can provide up to 12 amps maximum, after which it will begin to shut down to protect itself.

To use the charger simply place the rocker switch to the ON position, at which point it should illuminate and charging will commence.

ROADS LIGHTS FUSES

The fuses are located on the front bulkhead of the right hand front bed.

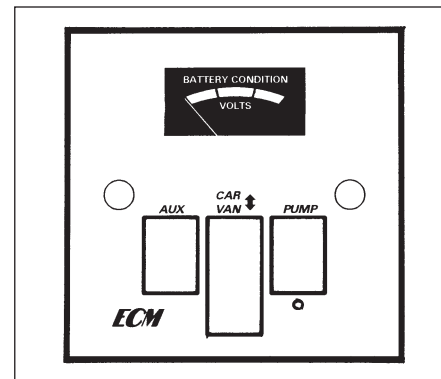
Fuse Ratings

1	LH ROAD	5A
2	RH ROAD	5A
3	LH INDICATOR	7.5A
4	RH INDICATOR	7.5A
5	FOG	7.5A
6	STOP	7.5A

ECM ELECTRICAL CONTROL MODULE

PUMP SWITCH & INDICATOR

Included on this panel is a pump isolation switch and pump running indicator. The pump isolation switch is used to isolate power to the water pump in the event of a pump fault or merely as a safeguard against unwanted pump operation. The red pump running indicator will light up as a warning when the water pump has been activated.



AUX SWITCH

This switch may be used to power any auxiliary dc circuits the user may wish to have added to the system.

Battery Condition Meter

This meter indicates the power remaining in your caravan battery.

Readings should be taken as follows:

- Green region - Fully charged
(no charge necessary)
- Yellow region - Adequate charge
(re-charge if desired)
- Red region - Low charge
(turn on charger switch to re-charge)

A car/caravan changeover switch is provided in this module and should be used in the following way:

Caravan position

When in this position dc power is available from the caravan battery to power all 12 volt electric circuits. If the charger is switched ON the caravan battery will be charged up via the charger/transformer unit.

Central position

When in this position with the charger switch ON, power is provided to all 12 volt circuits via the charger/transformer only. With the charger OFF all dc circuits are isolated.

Note: The switch should be placed in this position when the van is being towed.

Car position

Note: First of all the towing vehicle should be electrically connected to the caravan via the 12S socket.

The switch can be placed in this position should the caravan battery become discharged and no mains power is available.

BATTERY

It is recommended that a good quality leisure battery is always in circuit when the system is in use.

A deep cycling heavy duty 12v battery should be purchased to provide power for lights and other electrical appliances. A

proprietary brand leisure battery with either a 60 or 90amp capacity is recommended.

Note: 90 amp batteries and above should be checked dimensionally before purchasing, to ensure fitment within the battery compartment, as brands vary in size.

It should be remembered that batteries suitable for the electrical demands of a caravan differ in design from those for use with a car, and whilst the system may operate with a car battery it is strongly recommended that only a leisure type battery, maintained in good condition is used. The battery should be kept topped up at all times.

The battery should be positioned in a compartment vented to the outside and should be properly secured.

WARNING: When connecting the battery, ensure that the correct polarity is observed (black is negative and red is positive) and that the terminals are securely fastened.

Under normal circumstances it should not be necessary to remove the battery other than for routine inspection of terminals and "topping up".

WARNING: Explosive gases may be present at the battery. Take care to prevent flames and sparks in the vicinity.

Your caravan has been fitted with an in-line fuse between the battery terminal and strip connector. It is recommended that the fuse rating fitted in this location does not exceed 20 amps.

WARNING: Switch off all appliances and lamps before disconnecting the battery.

Smoking is prohibited around the battery compartment.

To preserve the life of your leisure battery and charger please observe the following:

- i) Do not leave all 12v lights powered at the same time as this will drain your leisure battery more rapidly.
- ii) If all 12v lights must be powered together, ensure the battery is 'in-circuit' i.e. selector switch in the 'van' position and that the battery charger is turned on.
- iii) For optimum performance use the transformer/charger unit with a leisure battery attached.



Electrics

SUPPORT SERVICE

PLUG-IN SYSTEMS LIMITED PROVIDE AN ON-CALL SERVICE FOR WARRANTY OR NON-WARRANTY REPAIRS.

IF YOU WISH TO TAKE ADVANTAGE OF THIS SERVICE FOR PLUG-IN-SYSTEMS ONLY

Telephone (01482) 652523 and ask for PRODUCT SUPPORT SERVICE.

HABITATION RELAY

To conform with European Safety Standards (EMC) all caravans have been equipped with a habitation relay.

This relay is actuated when the 12N/12S plugs are connected to the car's sockets and the car ignition is turned on.

The relay automatically isolates all 12V equipment within the caravan, excluding the fridge's 12V power supply, from the car.

GENERATOR GUIDELINES

- Lack of regular servicing can be the cause of most generator problems, gensets under 2kW are mainly dependent on engine speed for output frequency and voltage, poor or no servicing may cause the engine speed governor to run the genset engine too fast. Therefore frequency and output voltage can rise above the specification of the machine data plate i.e. 240v at 50Hz, this may

cause damage to electrical/electronic equipment (such as battery chargers).

- A generator should always be run for a few minutes prior to connection with the caravan or motorhome electrics, to allow it to warm up and the output to settle to a steady level.
- The AC output of generators is often derived from an AC alternator, rectified to DC then inverted back to AC. In essence this means the output sinewave may not be very smooth and may not run sophisticated electronics efficiently. Some of the new wave of gensets are more sophisticated in their production of a sinewave output and are more suited to run electronic equipment.
- If in doubt consult your genset dealer or manufacturer for advice.

ESM2000

The ESM2000 electrical Supply Module is a 240 volt ac and 12 volt dc power control unit. It provides all the necessary features for control of the electrics in a caravan. The unit provides the following features:

Mains 240v ac - MAINS MODULE

with EARTH LEAKAGE PROTECTION
OVERCURRENT PROTECTION (RCD)
REVERSE POLARITY INDICATION

12 volt dc - FULLY AUTOMATIC TRANSFORMER/CHARGER

with OVERCURRENT PROTECTION
SHORT CIRCUIT PROTECTION

- SWITCH & FUSE MODULE

with BATTERY CHANGEOVER SWITCH
CHARGER ON/OFF SWITCH
8 FUSED DC OUTPUT CIRCUITS

UNIT DESCRIPTION

Mains Module

The ESM2000 is designed to operate on a mains supply of 207-253 volts ac (making it ideal for use with low continental voltages). The 40 amp RCD (Residual Current Device) gives protection against earth faults and also acts as the main switch. The mains module also has three MCB's (Miniature Circuit Breakers) which are basically resettable mains fuses, to protect against overcurrent. Allocation of the MCB's is as follows:

MCB1 - SOCKETS/FAN MASTER (if fitted)

MCB2 - CASCADE/LIGHTS (if fitted)

MCB3 - FRIDGE/CHARGER

Using a generator

When using a generator in conjunction with the ESM2000 the following must be observed, failure to do so may result in damage to the unit:

- i) Always start the generator with the mains isolator in the caravan turned off.
- ii) Allow the generator to warm up for a few minutes before energising power in the caravan, as the output voltage can be higher when cold.
- iii) Check the generator output voltage regularly to ensure it is within the specification of the ESM2000 system (i.e. 230 volts +/- 10%)

Transformer/Charger

The ESM2000 employs a fully automatic mains to 12 volt dc transformer and battery charger, able to operate with a wide range of input voltages and provide a stable output voltage even under load. The unit can provide up to 12 amps maximum, after which it will begin to shut down to protect itself.

SWITCH & FUSE MODULE

Car/Van Selector Switch

The car/caravan changeover switch provided in this module should be used in the following way:

caravan position - When in this position dc power is available from the caravan battery to power all 12 volt electric circuits.

If the charger is switched on, the caravan battery will be charged up via the charger/transformer unit.

central position - When in this position with the charger switch on, power is provided to all 12 volt circuits via the charger/transformer only. With the charger off all dc circuits are isolated.

Note: The switch should be placed in this position when the van is being towed

car position - The switch can be placed in this position should be caravan battery become discharged and no mains power is available.

Note: First of all the towing vehicle should be electrically connected to the caravan via the 12S socket

Charger switch

When the caravan battery requires charging, press this switch to the on position (it should then illuminate). Also ensure the Selector Switch is in the van position

DC Fuses

Eight fuses are provided in this module to protect all dc circuits, the fuse allocation is shown below. Fuses must be replaced only with the specified values.

Fuse 1 - Front roof lighting

Fuse 2 - Rear roof light

Fuse 3 - Fanmaster

Fuse 4 - Radio

Fuse 5 - 12v sockets/Hitchlight/TV amp

Fuse 6 - Fan circuits

Fuse 7 - Water pumps/Water sensor

Fuse 8 - Ignitions

KT9/2000

INDICATOR MODULE

Battery/Water Level meter (KT9/2000GT only)

This meter indicates the amount of fresh water remaining in the inboard water tank. Simply press the test switch to the water position and the meter will display a level on the following scale:

Empty - $\frac{1}{4}$ - $\frac{1}{2}$ - $\frac{3}{4}$ - Full

To test battery voltage simply press the test switch to the battery position, readings should be taken as shown below.

Battery Condition Meter (KT9/2000GL/GX only)

This battery condition meter indicates the power remaining in your caravan battery. Readings should be taken as follows:

Green region - Fully charged
(no charge necessary)

Yellow region - Adequate charge
(re-charge if desired)

Red region - Low charge (turn on charger switch to re-charge)



Electrics

Cascade/Pump Indicators

This module provides indicators for the Cascade water heater fitted in your caravan. The three indicators show the following:

- Green LED - Heater is switched on
- Red LED - There has been a heater fault, probably a low gas supply
- Yellow LED - DC voltage supply is too low for the heater to operate

Also included in this module is a pump running indicator. This red indicator will light up as a warning when the water pump has been activated.

SWITCH MODULE

This module contains all the control switches for electrical facilities within the caravan.

12V Isolation Switch

This switch will effectively isolate 12 volt power to all dc circuits by opening a relay. This switch should be used only when wishing to isolate power for reasonably short periods (e.g. when going out for the day). For isolation during storage the Car/Van switch on the ESM2000 unit should be used (place Car/Van switch to the centre 'off' position).

Pump switch

This switch merely energises the inboard water pump ready for use. In caravans with

an outboard pump, this switch will be a two way type for energising whichever pump is required (i.e. internal or external)

Entry Light switch

This switch energises an internal entry light

Battery/Water test switch (KT9/2000GT only)

This switch should be pressed to the battery position to test battery voltage or the water position to test the water remaining in the inboard tank.

Water Heater switch

This switch energises the gas ignition on the Carver water heater. When switched to the 'on' position, the green indicator marked 'heater on' should illuminate and the ignition should energise.

ALARM MODULE - IDM 2000

Important

This handbook should be read through carefully before any attempt is made to install and use the system. For case of understanding it is suggested that this handbook is read whilst viewing the keypad. Your alarm system, when new, contains the manufacturers code 1234. For security reasons this should be changed as soon as practical. (See 'Changing the Personal Code').

Factory Settings

Entry Delay	-	0:00 (0 secs)
Exit Delay	-	0:20 (20 secs)
Siren On Time	-	1:00 (1 minute)
Manufacturers		
Personal Code	-	1234

Changing the Personal Code

1. Press "F", press "1"
2. Enter the current code. (1234 if new).
3. Enter desired 4 digit code.
4. Press "F".
5. This operation can be cancelled at any time before step 4 by pressing "C".

Changing the Entry Delay Time

1. Press "F", press "0".
2. Enter your personal code.
3. Enter the new entry delay as 3 digits, i.e. 10 seconds is entered 010.
4. Press "F".
5. This operation can be cancelled at any time before step 3 by pressing "C".

Note: The Entry Delay Time must be as short as possible to prevent compromising security.

Changing the Exit Delay Time

1. Press "F", press "2".
2. Enter your personal code.
3. Enter the new exit delay as 3 digits, i.e. 20 seconds is entered 020, 1 minute is 100. (Please note the maximum time allowed is 4 minutes i.e. 400).
4. Press "F".
5. This operation can be cancelled at any time before step 3 by press "C".

Changing the Siren-on Time

1. Press "F", press "3".
2. Enter your personal code.
3. Enter the preferred time as 3 digits, i.e. 2 minutes is entered 200. (Please note the maximum time allowed is 4 minutes, i.e. 400).
4. Press "F".
5. This operation can be cancelled at any time before step 3 by pressing "C".

Setting up the Tilt Sensor

The tilt sensor is not adjustable and requires the caravan to be reasonably level. If the Tilt Sensor is active, one of the Tilt Sensor Indicators will illuminate on the keypad. Adjust the level of the van until the light goes off.

Arming the System

If you are in the PIR's sight, then it is possible that when arming the system, any movement detected by the PIR will deselect the PIR channel. To avoid deselecting the PIR accidentally please ensure that you remain perfectly still when arming the system. This is very important when the keypad is sited within the PIR coverage area.

1. Enter the personal code, the indicators for all available sensors will light (If a sensor indicator fails to light, see "TROUBLESHOOTING").
2. To Disable any sensors not required, press the relevant key, i.e. 1 for PIR, 2 for tilt, 3 for tow sensor. Repeated pressing will select (light comes on) and disable (light goes off) the relevant sensor.
3. Press "F". The exit delay will begin, 1 pulse per second.
4. 2 short bursts on the siren will be heard at the end of the exit delay. This confirms the system is armed.
5. This operation can be cancelled at any time before step 4 by pressing "C".

Disarming the System

1. Enter your personal code. (This is the only way to disarm the system).
2. If the system has been inactive all indicators will flash twice on the keypad.

3. If a sensor has been activated then the corresponding light on the keypad will flash five times. However, if the system had been continuously active for 20 minutes or more (and subsequently reset) there will be a random flashing of indicators proceeding the display of the sensor(s) responsible.

Note: When the siren is active there is no limit on key entries. When the siren is inactive a maximum of 16 key entries are allowed. If 16 key entries are exceeded then the system will not accept any more entries until the siren is activated.

Memory Recall

This enables the user to tell if any sensors were active during the previous armed state.

1. Press "F", press "5", watch the indicators.
2. If all indicators flash twice the system has been quiet.
3. If any indicator flashes 5 times, the corresponding sensor has been active.
4. A random flashing of indicators followed by 5 flashes for sensor(s) means that the system has had to reset (i.e. disarm itself) due to the siren being active for 20 minutes.



Electrics

Testing

A time limit of 2 minutes is imposed when in the test modes described. After this time the system will return to standby. This is to preserve battery power.

Checking the Battery Life

Battery Life (between recharges) is eight months maximum. NEVER allow the battery to completely discharge. Regular battery life checks are strongly recommended.

1. Press "F", press "4".
2. A number of pulses will be heard; 1 pulse = 1 month, 3 pulses = 3 months etc up to a maximum of 8 pulses. If, however, a random flashing of indicators occurs, this indicates that the battery is in need of immediate charging.
3. If the battery is low, connect the battery charger via the socket on the main control box. This will be located under the front offside bed-box. Battery charging should be complete within 24 hours (for a fully discharged battery).

Please note

- i) avoid charging battery while the system is armed.
- ii) reading the battery status whilst charging the battery will give a false indication of battery life, please wait 15 minutes after charging battery before taking a reading.

Testing the PIR

1. Press "F", press "6".
2. Walk in front of the PIR. The light on the keypad marked PIR will illuminate five times, and give an audible signal.

Testing the Siren

1. Press "F", press "7".
2. The siren will sound. Press "C" to stop the siren.

Testing the Tow Sensor

The towing vehicle must be connected to the caravan via the 12S plug before this test can be carried out. This sequence also assumes that the towing vehicle is correctly wired.

1. Press "F", press "9".
2. The "FNC" light on the keypad will stay on.
3. Disconnect the car from the caravan. The siren will emit a short burst followed by five flashes on the keypad sensor indicator, and give an audible signal.

Testing the Tilt Sensor

1. Press "F", press "9".
2. Adjust the level or move the caravan until one of the Tilt Sensor Indicators on the keypad illuminates and gives an audible signal.
3. Press "C".

Troubleshooting

1. When attempting to arm, on entering the personal code, sensor lights do not illuminate - The code entered is incorrect, or all sensors are active. Check the tow vehicle is attached, that there is no-one in the PIR's field of vision, connections to the PIR are good and that the caravan is level.
2. The tilt sensor light does not illuminate on arming - The tilt sensor is active. (Press "C" to cancel then refer to section 'Setting up the Tilt Sensor').
3. The tow sensor light does not illuminate on arming - The 12S (grey) socket on the towing vehicle must be correctly wired. Assuming this is the case then the vehicle may have been disconnected from the caravan (e.g. when on sit).
4. The PIR sensor light does not illuminate on arming - Ensure no-one is in the PIR's field of view, including the person who is arming the system. Move everyone outside the PIR's field of view and press "1". If the PIR indicator still does not light then check PIR connections.
5. On disarming the system the sensor indicators do not light - An incorrect personal code has been entered.
6. If you are unable to resolve your problem please contact Plug-In-Systems Product

Support Department; Tel: 01482 659309.

Clearing the System back to Manufacturers Settings

If for any reason you wish to set the IDM2000 back to its factory settings then the following procedure should be used:

1. Press "F", keep finger on the "F" key until 5 bursts are heard from the keypad buzzer. The IDM2000 has now reverted to factory settings.

This can only be done when the system is disarmed.

The Noise Pollution Act

If the alarm is activated continuously for 20 minutes, the system will shut down. This effectively disarms the system. This is a requirement of the Noise Pollution Act.

Plug-In-Systems reserve the right to change product specification at any time without prior notice.

SPECIFICATION

Mains Input	230 volts +/- 10% ~ ac
Frequency	50Hz
Output voltage	13.8 volts DC
Output current	12 amps (max)
Battery recommended	Re-chargeable lead-acid 12 volt battery, 6 cells, leisure type, 44 ampere- hours minimum

Dimensions

Height	193mm
Width	102mm
Depth	210mm (max)
Weight	2.28Kg

PRODUCT SUPPORT

Plug-In-Systems Ltd offer the customer an On-Site Service, available for both Warranty and Non-Warranty repairs (on the CEC and Plug-In-Systems range of equipment only). If you would like to take advantage of this service then please ring Plug-In-Systems (direct) on:

HULL (01482) 659309
and ask for PRODUCT SUPPORT



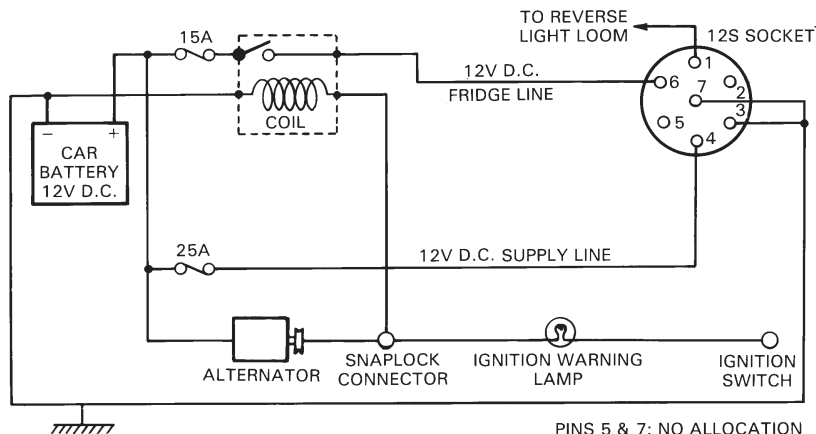
Electrics

12 VOLT ELECTRICAL SUPPLY

If your car is fitted with the appropriate relay, please note the following points:

1. The caravan battery will be charged by the car charging system independently of the distribution panel.
2. If the caravan battery level is "low", power for the caravan 12 volt system can be obtained from the car battery, by connecting the 12S (grey) plug to the car, and setting the distribution panel selector switch to "car". This will draw power from the car battery and care should be taken not to reduce the level of the car battery so low that the car engine cannot be started. (The battery level indicator in the caravan distribution panel will show the condition of the car battery in these circumstances).
3. When the car and caravan are connected through the 12N and 12S plugs and the car engine is running, 12 volt power will be supplied to the refrigerator, provided the refrigerator selector switch is set to the 12v position, regardless of the position of the distribution panel selector switch.
4. If an extension lead from the 12S socket on a towing vehicle to the 7-core connecting cable is used while a caravan is parked on a caravan pitch, its length

WIRING OF 12S SOCKET TO TOWING VEHICLE



Note:

If using a combination relay, ensure the supply fuse is the correct amperage. A lower rating will 'blow' causing the, if switched on, to be connected directly to the caravan battery. While towing, the caravan battery will be discharged instead of being charged.

should be kept to a minimum and not exceed 5 metres. The minimum cross sectional area of the supply and return leads in the extension cable should be 2.5mm².



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Fitted Equipment

Equipment Specification

For details on type of equipment fitted in your caravan, please refer to the Sales Brochure or Dealer.

IMPORTANT

To maximise the use and life of all fitted equipment in your caravan it is essential that any accompanying manufacturers' literature is read fully. All recommended maintenance and preparation procedures should be followed. The information provided in this handbook is only intended as a guide. If in any doubt consult your manufacturer appointed dealer, particularly before attempting to install EXTRA EQUIPMENT.

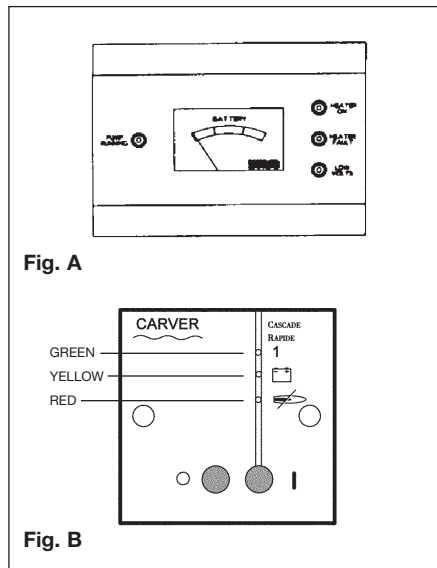
WHALE WATER PUMP

The Whale pump is a non self priming intermittently rated centrifugal pump which draws approximately two amperes from a 12 volt battery and therefore maximum continuous operation should not exceed 15 minutes.

The pump should not be run without water and should not be used to pump water of a temperature above 60°C.

SHURFLO WATER PUMP

Fresh water is supplied to the caravan by a Shurflo pump. This pump is a completely sealed unit designed for intermittent use and is self-priming.



CASCADE 2 GE RAPIDE WATER HEATER

OPERATING INSTRUCTIONS

The gas side of the Cascade 2 GE Rapide Water Heater is operated by the controller on the integrated control panel (Fig. A) except for models with the separate control panels which are operated from the wall switch (Fig. B).

Before switching on the gas burner or the mains immersion heater make sure that water flows from the hot taps. This indicates that the water heater is full.

TO OPERATE THE HEATER ON GAS

1. Close the window near the Cascade cowl when the heater is running on gas.
2. Check that the 12 volt supply is connected and switched on. **DO NOT** use a battery charger as the only source of supply.
3. To light the heater, press the ON button. A continuous green light indicates that the heater is working satisfactorily.
4. To switch the heater OFF press the OFF button.

Light Indication

Green. The heater is working satisfactorily.

Green & Yellow. The DC voltage is below the 10.5 volts that is required to operate the heater. Recharge the battery.

Green & Red. The heater has failed to ignite or that the heater has gone to safety shut down. This is usually due to failure of the gas supply or air in the gas system after fitting a new cylinder. Switch the heater off and **WAIT 3 MINUTES** before attempting to relight the heater. If air in the gas system is the problem several attempts may be necessary before the heater ignites.

Fitted Equipment

Temperature and adjustment

The thermostat cannot be adjusted and is pre-set to approximately 70°C.

Water heaters (as with all other gas appliances) should be switched off and the gas cylinders turned off when the caravan is in motion.

TO OPERATE THE HEATER ON MAINS ELECTRICITY

Ensure that the caravan is connected to the site mains and the supply is adequate. (The immersion heater uses approximately 3.75 amps.)

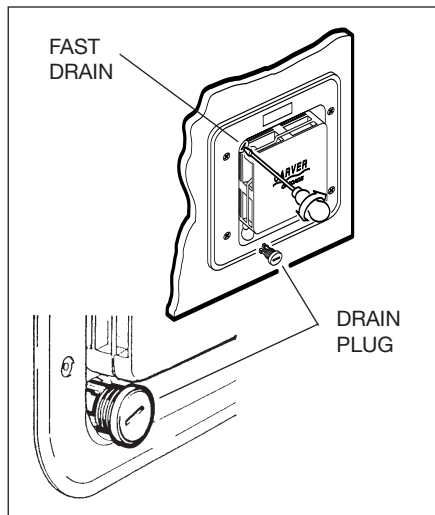
1. Switch on the isolation switch. If it is the illuminated type, the light should indicate that the heater is working.
2. To switch OFF, switch off the isolation switch.

Over Temperature

Important: If the mains electrical supply to the heater is switched on but the heater is not working, the over temperature thermostat may have operated.

This can be due to:

- 1) Switching the heater on without water in the tank. Always check that the heater is full of water before switching on.
- 2) Failure of the normal operating thermostat. Manually reset the over temperature thermostat by pressing the button in the centre of the electrical



connection box. If the operating thermostat has failed the over temperature thermostat will again trip out. If this occurs DO NOT USE THE IMMERSION HEATER and consult your Carver Dealer.

FROST PRECAUTIONS

IMPORTANT:

During periods when the heater is likely to freeze (e.g. when the caravan is stored during the winter) it MUST be drained down to prevent damage.

To fast drain the system:

1. Park the caravan on level ground.
2. Ensure that the gas and electricity are turned off.
3. Open all hot and cold taps and shower heads if fitted.
4. Remove drain plug and store in safe place in caravan (e.g. kitchen sink).
5. Using a flat bladed screwdriver, turn the fast drain 90°.

The water system will now drain - this is likely to take 5 minutes.

Remember that at least 9 litres (2 gallons) of water should drain from the system.

At the start of the season insert the drain plug and sterilise the system by using a sterilising fluid, e.g. Chempro SDP or similar. DO NOT USE DOMESTIC BLEACH, CAMDEN TABLETS OR SODIUM METASULPHIDE.

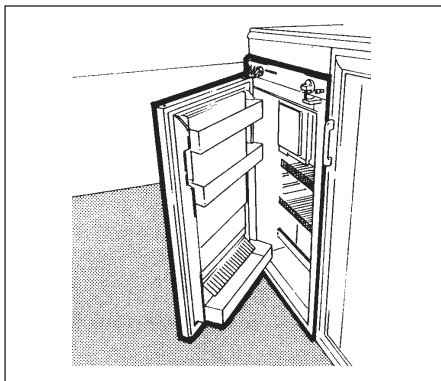
If a filter is fitted it is recommended to replace it at the start of the season.

TO RECOMMISSION THE HEATER

Close cold taps and drain plug and reconnect the pump. Let the system fill with water until water flows steadily from the hot taps. About two gallons of water will be required. Once the hot taps are flowing freely close them and switch on the Cascade 2 GE heater.



Fitted Equipment



REFRIGERATOR

When using your refrigerator for the first time, it is advisable to wash the interior and its accessories.

When the caravan is on tow, the refrigerator should be operated electrically, i.e. from the 12V battery in the towing vehicle, and not by means of bottled gas.

CONTROLS

The refrigerator can be run on either 240V, 12V or LP gas. Changing between these modes of operation is carried out by means of the controls shown on the relevant control panel.

Caution!

Only use one source of energy at a time.

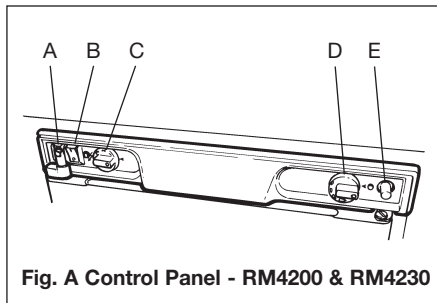


Fig. A Control Panel - RM4200 & RM4230

MODEL RM4200 AND RM4230

Bottled Gas Operation - Lighting the burner

1. Open the shut-off valve of the gas bottle (check that there is enough gas). Open any on-board shut-off valve.
2. Check that the switches for mains and 12V are off.
3. Depress and turn on the gas control safety device knob (D) to the large flame symbol.
4. Depress the gas control safety device knob (D) and hold it down while depressing the piezo-electric igniter button (E) rapidly 3 or 4 times in quick succession.

5. Check the flame viewer (located bottom left of refrigerator) to see if the flame is alight.
6. Keep the safety device control knob depressed for a further 15-30 seconds.
7. Release the safety device control knob and again check to see that the flame is alight.
8. To terminate gas operation, turn knob (D) to 'O'.

ELECTRIC OPERATION

240V Operation

1. Turn off gas or 12V operation when applicable.
2. Turn the knob (C) of the thermostat to its highest (coldest) position.
3. Set switch (B) to position I.

12V Operation

There is no thermostat control on 12V operation.

Only operate your refrigerator on 12V when the engine of your vehicle is running.

Note: Before operating the refrigerator on 12V it should be pre-cooled, together with its contents, by running it on bottled gas or 240V for a few hours before changing over to 12V and starting on a journey.

1. If applicable, turn off the gas operation.
2. Set the 240V rocker switch (B) to 'O' and the 12V rocker switch (A) to 1.

Regulating the temperature

Once the refrigerator has been started it will take a few hours to become cold.

On 240V operation the refrigerator is controlled by a thermostat and the thermostat knob (C) should be set at 3. If a colder temperature is required, set the thermostat to a higher number and vice versa.

On LP gas operation the refrigerator temperature is regulated by the gas control knob (D). If the ambient temperature is above 25°C and/or the door of the refrigerator is frequently opened, the knob should be set in the 'max' position. Below 25°C, the knob should be set at 'mid' and below 10°C at 'min' to avoid temperatures below freezing in the main compartment.

MODEL RM4271

Two rocker switches are used to select the electric power supply, one for 240V (B) and one for 12V (A) (See Fig. B).

Refrigerator temperature is controlled by a thermostat knob (C) when the refrigerator runs on 240V.

The gas supply is turned ON/OFF by means of the knob (D). When lighting the gas, the knob must be pressed as explained in LP Gas Operation.

Refrigerator temperature is controlled by a thermostat (E) when the refrigerator runs on LP gas. Please note that the thermostat has no 'OFF' position.

The gas flame is electronically lit, monitored and re-lit if necessary. For this, the toggle switch (F) should be 'ON' during gas operation.

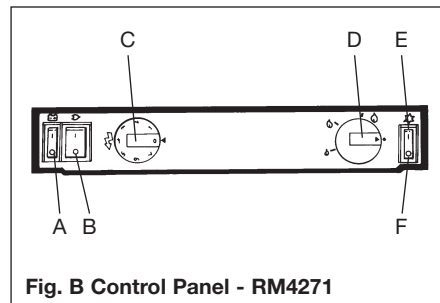
STARTING THE REFRIGERATOR

LP Gas Operation

Before you start gas operation:

1. Open the shut-off valve of the gas bottle (check that there is enough gas). Open any on-board shut-off valve.
2. Check that the switches for mains and 12V operation are off.
3. Turn on gas supply by pressing knob (D) and turning it to the flame position.

Fitted Equipment



4. Set the thermostat knob (E) to the highest setting.
5. Turn on switch (F). A light in the switch should now start to flash, indicating that sparks are being generated at the burner.
6. Press button (D). This opens the flame failure device and allows gas to flow to the burner.
7. When the flame ignites, the sparking stops automatically and the switch stops flashing.
8. Keep the knob (D) pressed for a further 10 to 15 seconds to activate the flame failure device, then release it.



Fitted Equipment

240V Operation

1. Turn off gas or 12V operation when applicable.
2. Turn the knob (C) of the thermostat to its highest (coldest) position.
3. Set switch (B) to position I. The switch will light up green when the power supply is connected.

12V Operation

Only operate your refrigerator on 12V when the engine of your vehicle is running. Install through a relay, otherwise your battery will soon be discharged.

Note: Before operating the refrigerator on 12V, it should be pre-cooled, together with its contents, by running it on bottled gas or 240V for a few hours before changing over to 12V and starting on a journey.

1. If applicable turn off the gas operation.
2. Set the 12V rocker switch (A) to I. The switch will light up red when the power supply is connected.

REGULATING THE TEMPERATURE

The position numbers refer to Fig. B.

Once the refrigerator has been started it will take a few hours to become cold.

On 240V operation the refrigerator is controlled by a thermostat and the thermostat knob (C) should be set at 3-5. If a

lower (colder) temperature is desired, set the thermostat to a higher figure.

On LP gas operation the refrigerator temperature is regulated by the gas thermostat knob (E), which should be set at 3-5. If a lower (colder) temperature is desired, set the thermostat at a higher figure.

On 12V operation the refrigerator works continuously.

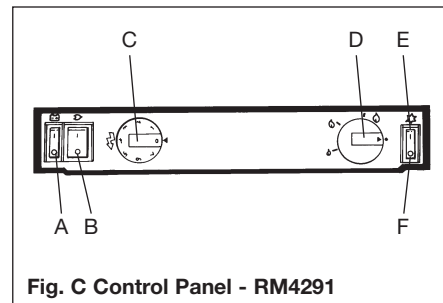


Fig. C Control Panel - RM4291

MODEL RM4291 (86 litres)

Two rocker switches are used to select the electric power supply, one for 12V (A) and one for 240V (B) (see Fig. C).

Refrigerator temperature is controlled by a thermostat knob (C) when the refrigerator runs on 240V.

The refrigerator runs continuously on 12V operation (no thermostat).

The gas supply is turned ON/OFF by means of the knob (D). When lighting the gas, the knob must be pressed as explained in LP Gas Operation.

Refrigerator temperature is controlled by a thermostat (D) when the refrigerator runs on LP gas.

The gas flame is electronically lit, monitored and re-lit if necessary. For this, the toggle switch (E) should be 'ON' during gas operation.

The RM4291 is fitted with an internal light which is operated by the door.

STARTING THE REFRIGERATOR

LP Gas Operation

Before you start gas operation:

1. Open the shut-off valve of the gas bottle (check that there is enough gas). Open any on-board shut-off valve.
2. Check that the switches for mains and 12V operation are OFF.
3. Turn on gas supply by pressing knob (D) and turning it to the highest flame position.
4. Press ON switch (E). A light in the switch should now start to flash, indicating that sparks are being generated at the burner.
5. When the flame ignites, the sparking stops automatically and the switch stops flashing.
6. Keep the knob (D) pressed for a further 10 to 15 seconds to activate the flame failure device, then release it.
7. To terminate gas operation turn knob (D) to the '●' position and put switch (E) to the OFF position.

240V Operation

1. Turn off gas or 12V operation when applicable.
2. Turn the knob (C) of the thermostat to its highest (coldest) position.
3. Set switch (B) to position I. The switch will light up green when the power supply is connected.

12V Operation

Only operate your refrigerator on 12V when the engine of your vehicle is running. Install through a relay, otherwise your battery will soon be discharged.

Note: Before operating the refrigerator on 12V, it should be pre-cooled, together with its contents, by running it on bottled gas or 240V for a few hours before changing over to 12V and starting on a journey.

1. If applicable turn off the gas operation.
2. Set the 12V rocker switch (A) to I. The switch will light up red when the power supply is connected.

REGULATING THE TEMPERATURE

The position numbers refer to Fig. A.

Once the refrigerator has been started it will take a few hours to become cold.

On 240V operation the refrigerator is controlled by a thermostat and the thermostat knob (C) should be set at 3-5. If a lower (colder) temperature is desired, set the thermostat to a higher figure.

On LP gas operation the refrigerator temperature is regulated by the gas thermostat knob (D), which should be set at the medium 'flame' position. If a lower (colder) temperature is desired, set the thermostat to the larger 'flame' position.

On 12V operation the refrigerator works continuously.

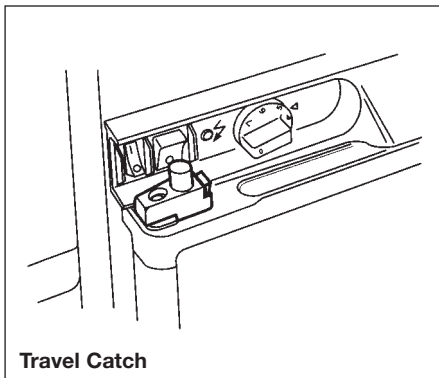
WINTER OPERATION (ALL MODELS)

Please check that ventilation grilles or the flue outlet are not blocked.

Ventilation grille covers are available from Electrolux and can be fitted to protect the unit against very cold air. These covers should be fitted when the temperature is below 10°C and when the caravan is laid up during winter months.



Fitted Equipment



Travel Catch

TRAVEL CATCH

All models are fitted with a travel catch to keep the refrigerator door securely closed when the vehicle is on the move.

Remember always to push the catch down, so that its lower end fully engages the plastic bush in the top of the door, before moving off.

FURTHER DETAILS

Consult the accompanying literature to obtain the full benefit of your Electrolux Refrigerator.

In the event of failure, contact Electrolux Service. Details of which can be found in your Yellow Pages Directory.

WARNING: When you are cooking it is essential to provide additional ventilation such as opening windows near the grill, cooker and oven (EN 721).

STOVES HOBS, GRILLS AND OVENS

THE HOB

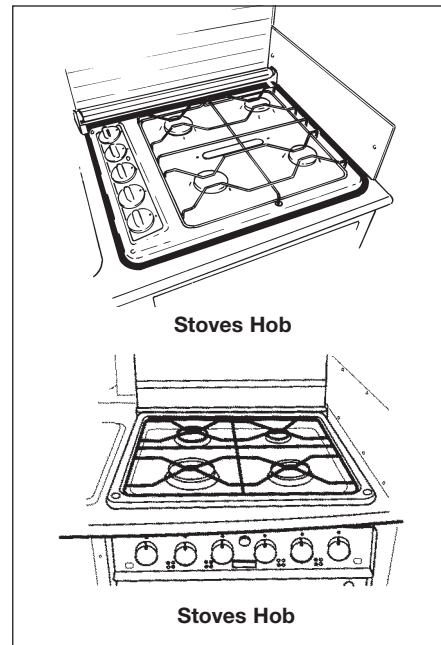
Caution:

- Do not use foil on the hob, as it creates a fire hazard
- Glass lids may shatter when heated, turn off all burners before shutting the lid
- Note: When positioning the pan support, ensure that the fingers are central to the burners (Fig 1).

Always use the most appropriate size of burner for the pan you wish to use. Use pans with a flat base of minimum 100mm/4 ins diameter, and maximum 200mm/8 ins diameter, which are stable in use. Avoid old or misshapen pans as these may cause instability.

Important: Any spillage of liquid should be cleaned away immediately to reduce the risk of fluid entering the appliance.

Ignition - Push in the control knob and turn anticlockwise to the large flame symbol. Keep the knob depressed, and press the

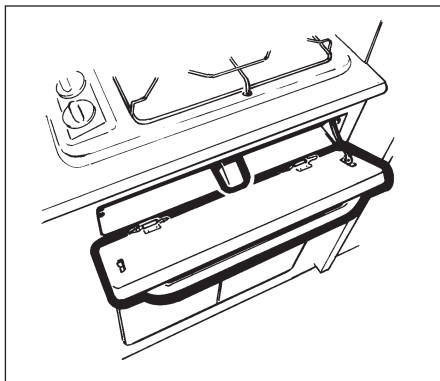


Stoves Hob

Stoves Hob

ignition button (if fitted), or use a hand held spark ignitor or gas lighter. The knob must be held in for 15-20 seconds before releasing.

Fitted Equipment



THE GRILL

- Note: The door must be open when the grill is used.
- Caution: When the grill is being used, accessible parts may be hot; young children should be kept away.
- Never cover the grill pan or grid with cooking foil, or allow fat to build up in the grill pan as this creates a fire hazard.
- Keep all flammable material away from the appliance.

To light the grill

Push in the control knob and turn anticlockwise to the large flame symbol. Keep the knob depressed, and press the ignition button (if fitted), or use a hand held

spark ignitor or gas lighter. The knob must be held in for 15-20 seconds before releasing.

Detachable grill handle (if supplied)

Place the handle (shield uppermost) over the edge of the grill pan at the recess and slide along to position centrally between the two locator bumps. To remove the handle, place the grill pan down, and lift the handle slightly as you slide it along the recess.

Using the grill

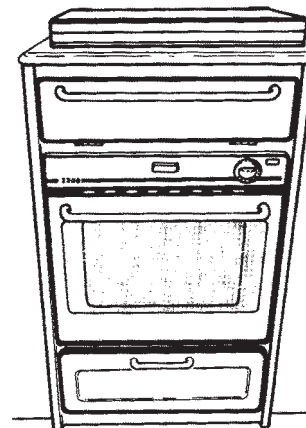
Push in the grill pan until it locates centrally under the grill burner

There are three different grilling positions as the trivet can be inverted to give a high or low position or it may be removed.

1. The high trivet position is suitable for toasting bread.
2. The low trivet position is suitable for grilling all types of meat.
3. With the trivet removed the food is placed directly on the base of the grill pan, eg; when cooking dishes such as whole fish.

Always preheat the grill for 3 minutes for best results.

When you have finished grilling, check the control knob is in the off position

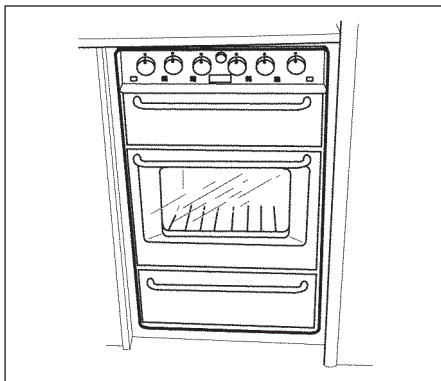


THE OVEN

- **Caution:** When you are cooking, keep children away from the vicinity of the oven.
- **Important:** A safety device stops the ignition being used when the oven door is closed.
- Do not use foil on the oven shelves as this creates a fire hazard, and can hinder circulation of heat.
- Keep all flammable material away from the appliance.



Fitted Equipment



To light the oven

1. Open the oven door and turn the control knob anticlockwise to the required gas mark. Push in and hold in the control knob, and either press the ignition button (if fitted) or use a hand held spark ignitor or gas lighter.
2. Once the burner has lit, close the oven door and hold the knob in for 15-20 seconds.
3. If the flame goes out, the flame sensing device cuts off the gas supply to the burner. To light the oven again, wait for 3 minutes then repeat the above procedure.

To turn off - Push in the control knob and turn clockwise.

Preheating

The oven must be preheated for 10 minutes when reheating frozen or chilled food, and we recommend preheating for all yeast mixtures, batters, souffl s and whisked sponges.

Using the oven

The shelf positions in the oven can be altered. If you prefer darker cooked results, cook on a higher shelf. For paler results use a lower shelf.

The cake tray and roasting tin that are supplied with this appliance are the largest which can be used for good results and even baking. Extra shelves, tins or trays can be ordered from your supplier.

Place food items on the tray and position the tray on the centre of the shelf, leaving one clear shelf position between shelves to allow for circulation of air.

CLEANING

Caution: Any cleaning agent used incorrectly may damage the appliance.

Always let the appliance cool before cleaning.

Some cooking operations generate a considerable amount of grease. This combined with spillage can become a hazard if allowed to accumulate on the appliance through lack of cleaning. In extreme cases this may amount to misuse of the appliance

and could invalidate your guarantee.

Do not use caustic pastes, abrasive cleaning powders, coarse wire wool or any hard implements as they will damage the surfaces.

All parts of the appliance can be safely cleaned with a cloth wrung out in hot soapy water.

Burner caps and heads

Important: Allow burners to cool before cleaning.

Caution: Hotplate burners can be damaged by soaking, automatic dishwashers (or dishwasher powders/liquids), caustic pastes, hard implements, coarse wire wool and abrasive cleaning pastes.

For the burners to work safely, the slots in the burner head, where the flames burn, need to be kept clear of deposit. Clean with a nylon brush, rinse and dry thoroughly.

Clean with a mild cream cleaner eg; Jif, or use a moist soapy Brillo pad.

Note: Fixed burners (if fitted): Some versions incorporate fixed burners. These burners are secured to the hob with 2 screws. Fixed burners must be cleaned whilst in position. Make sure that the gap between the burner and the hotplate does not become blocked with grease.

Fitted Equipment

Glass parts (if fitted)

DOOR PANELS, FACIA PANEL,
HOTPLATE LID

Do not use abrasive cleaners or polishes.
Use a mild cream cleaner, eg; Jif. Rinse
thoroughly and dry with a soft cloth.

The inner door glass panel can be removed
for cleaning; open the door wide, hold the
bottom and top edges and slide out. When
replacing the glass panel, hold it level and
straight with the grooves in the door trims
before sliding back in.

Painted, plastic and gold coloured parts

DOOR FRAME & HANDLES, CONTROL
KNOBS

Only use a clean cloth wrung out in hot
soapy water.

Vitreous enamel parts

GRILL PAN, HEATGUARD, OVEN/GRILL
COMPARTMENT(S), HOB SPILLAGE WELL,
PAN SUPPORTS

Use a mild cream cleaner. Look for one that
has the Vitreous Enamel Council's
recommendation seal, eg; Jif.

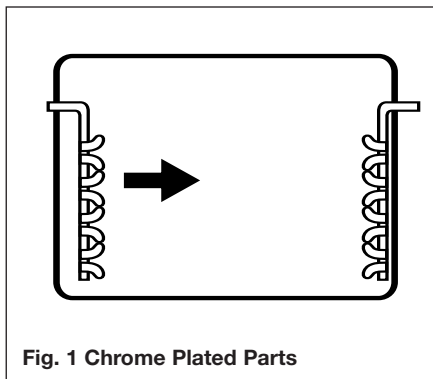


Fig. 1 Chrome Plated Parts

Chrome plated parts (Fig 1)

GRILL GRID, SHELVES, SHELF RUNNERS

Do not use abrasives or polishes. Use a
moist soap pad, eg; Brillo. Shelf runners can
be removed for cleaning. Grasp the runners
and slide out of the hanging holes as shown
in fig 1.

Stainless steel surfaces (stainless steel models only)

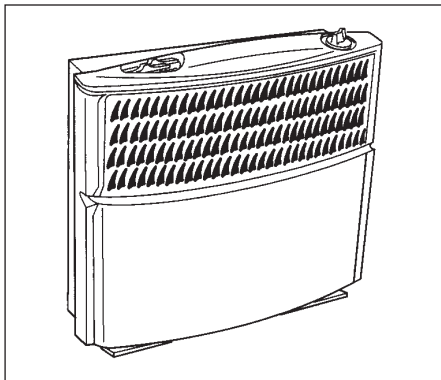
Only use a clean cloth wrung out in hot
soapy water, and dry with a soft cloth. Do
not use undiluted bleach or any products
containing chlorides as they can permanently
damage the steel.

Some foods are corrosive, eg; vinegar, fruit
juices and salt, and they can mark or
damage stainless steel if they are left on the
surface for any length of time. Wipe any
spillage immediately.

Sharp objects can mark the surface of
stainless steel but will become less
noticeable with time.



Fitted Equipment



CARVER SPACE HEATERS

Please read these cautions before using your heater.

In the event of a gas leak, immediately turn off all appliances and the gas supply at the cylinder. Contact your nearest approved service agent without delay.

- The gas supply to the heater must be from an approved pressure regulator of adequate capacity. Under **NO** circumstances should an industrial or adjustable regulator be used on caravans.
- The heater must not be operated while refuelling or when the vehicle is in a confined space such as a garage. The

heater **MUST NOT** be used if the flue has been damaged.

- The Carver 2000 and 5500 range of heaters **MUST NOT** be used while the vehicle is in motion.
- The products of combustion pass through the vehicle floor and requires unrestricted air entry beneath the vehicle into which it is fitted. A minimum of 3 sides of the vehicle **MUST** be exposed at all times. This is to allow for dispersal of the underfloor combustion products. If there is a possibility of the sides becoming blocked by snow or mud, then the heater **MUST NOT** be used. Every effort must be made to clear obstructions before use.
- There **MUST NOT** be a mantelpiece or shelving sited above the heater.
- Curtains **MUST NOT** hang within 150mm of the sides of the heater, or within 300mm above the top of the appliance.
- **DO NOT** place furniture or upholstery closer than 5mm to the sides of the heater.
- Where children, the elderly or infirm are present, we recommend that a guard be fitted around the heater when in use.
- Always wait three minutes before attempting to relight the heater after switching off or the heater going in to fail safe shut down.

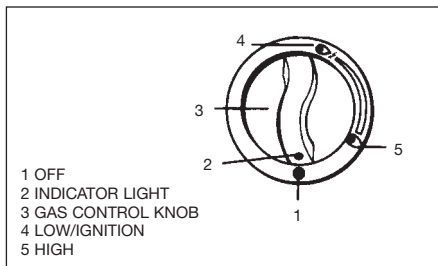
- **DO NOT** obstruct the gap at the bottom of the heater or the outlet grille slots.
- This heater does not contain any asbestos or asbestos related products.
- Aerosols and highly inflammable materials **MUST NOT** be stored in compartments behind or adjacent to the heater.
- These heaters must be switched off and the gas supply turned off while the vehicle is in motion.
- When the heater is first used, it is recommended that you open a window or door and turn the temperature setting to maximum for one hour. This will allow any odours when first using the appliance to escape. **Note:** If odours persist, contact your local distributor.

CARVER 2000P, 2000A and FANMASTER

To Light and Adjust the Heater - Gas Operation

1. Ensure the gas is turned on at the cylinder.
2. **Lighting the Heater:**
2000P, and 2000 Fanmaster
Press the control knob (3) down and turn to the 'LOW/ ⚡' position (4) and then press firmly downwards. A click will be heard as the igniter operates, to light the heater. If a gas cylinder has been replaced, it may require several operations of the igniter to light the flame.

Fitted Equipment



Observe through the viewing windows on the lower half of the front case, that the burner lights.

2000A and 2000 Fanmaster (12V 'Auto' Ignition)

As above turn to the '⚡' position and press firmly down. A continuous ticking will be heard, as the spark generator is actuated. An indicator light (2) built into the control knob will light up when the flame is lit.

- Continue to hold the knob down for 20 seconds and release. The flame supervision device will now have been actuated. The knob can now be released and adjusted to the desired setting as marked on the heater top panel.
- If the burner is extinguished for any reason, or fails to remain alight, the heater will shut down to a safe condition. In the case of the 12V 'Auto' ignition models

(2000A and Fanmasters with this ignition device), the continuous ticking of the spark generator will be heard until turned off.

- To turn off the heater at any time, turn the knob to the 'O' (1) position.
- Wait for at least 3 minutes, after shut down, before attempting to relight these heaters.

Electric Heating - Fanmaster models only Cautions:

- Read the operating instructions before using the Fanmaster.
- Read the operating instructions for the Carver gas heater before using it in conjunction with the Fanmaster.
- One or more duct outlets must be open whilst the Fanmaster is in use.
- The 230V external supply to the vehicle must be disconnected before the caravan is towed.

General Description

The Fanmaster is an automatically controlled fan designed to distribute warm air around the caravan via ducting.

All of the functions of the 2000 Fanmaster are controlled independently of the gas control - by front case slide switches when right-hand build is installed (Fig. 1), or by wall-mounted control panel for a left-hand installation (Fig. 2) .

Fig. 1

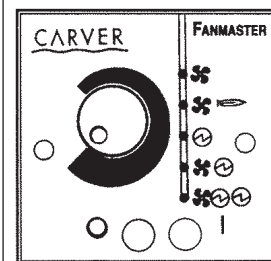
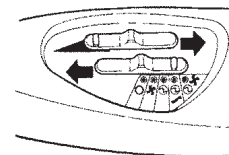


Fig. 2

The air is heated either by the Fanmaster's own electric element or by the Carver gas fired heater. Both the Carver gas heater and the Fanmaster can be used at the same time providing the fan is in operation.

The built-in elements are automatically or manually switchable between 0, 1kW and 2kW and require a 230V AC mains supply drawing a maximum of 8 amps at 2kW. The fan requires a 12V DC supply and will take 1.5A at maximum speed.



Fitted Equipment

When using electric heating the caravan temperature is regulated by the thermostat mounted at the top of the installation box but when using the gas heating the temperature is controlled by the gas heater thermostat. The night setting is a 1kW convector heater setting. In the summer the fan may be operated without any heat input to distribute cool air.

The Fanmaster has an air deflector allowing the majority of air to be directed down one fan outlet. For example, down the longest ducting run. This may have been preset on installation.

The duct outlets are generally of the butterfly type and may be opened or closed by adjusting the butterfly valves. Twisting the disc in its housing directs the flow in the direction required. One outlet on each leg of the duct layout must be kept open.

Servicing

In order to ensure that your heater continues to operate effectively, you will need to arrange for it to be serviced at least once a year by a competent and trained service engineer. By law no one is permitted to deal with the installation and servicing of gas appliances unless they have proven competence. Contact your nearest authorised caravan distributor if service or repair is required.

FANMASTER CONTROLLER OPERATIONS - SLIDE SWITCH ON HEATER TOP (R.H. INSTALLATION)

POSITION		OPERATION (without gas)	OPERATION (with gas)
0		Off	Gas convector
1		Manual fan speed - Temperature slider governs the fan speed. For cool air distribution.	Blown hot air distribution
2		1kW electric convector heating, no fan. Temperature slider selects desired room temperature	Electric and Gas convection, but a high gas heater output will inhibit the electric heating to maintain safe operating temperatures.
3		1kW electric fan heating, fan remains slow.	Electric and Gas blown distribution. Fan speed adjusts automatically based on outlet temperature.
4		2kW electric fan heating. Fan automatically adjusts speed to suit.	Electric and gas blown distribution. Fan speed adjusts automatically.

FANMASTER CONTROLLER OPERATIONS - WALLSWITCH CONTROL (L.H. INSTALLATION)

POSITION		OPERATION (without gas)	OPERATION (with gas)
0		Off	Gas convector
1		Manual fan speed - Wall switch knob governs the fan speed. For cool air distribution.	Blown hot air distribution
2		Automatic fan speed, temperature of heater governs fan speed.	Blown hot air distribution with automatic fan speed control.
3		1kW electric convector heating, no fan. Wall switch knob selects desired room temperature.	Electric and Gas blown distribution. Fan speed adjusts automatically based on outlet temperature.
4		1kW electric fan heating, fan remains slow.	Electric and gas blown distribution. Fan speed adjusts automatically.
5		2kW electric fan heating. Fan automatically adjusts speed to suit.	

CARVER 5500 Turbo Fanmaster Space Heater

Read the cautionary notes for the Carver Space Heaters before using your heater.

Before Lighting the heater

Ensure the gas is turned on at the cylinder.

Lighting the Heater (Fig. 3)

For the auto ignition press the control knob (4) down and rotate to the '⚡' position (2), maintaining downwards pressure. The igniter will be heard to operate with a continuous 'ticking' noise. On ignition the control knob indicator (3) will illuminate to show that a flame is present.

After the burner has lit, continue to hold down the control knob for a further 10 seconds. Release the control knob and the indicator should remain illuminated to show that the burner has remained alight.

For the Piezo ignition, press the control knob (4) down and rotate to the '⚡' position (2), maintaining downwards pressure. Press the ignition button (7). Check through the viewing window on the front case that the pilot burner is alight, if so continue to hold the control knob down for ten seconds.

Release the control knob and the pilot burner should remain alight. It may require several operations of the igniter to light the burner.

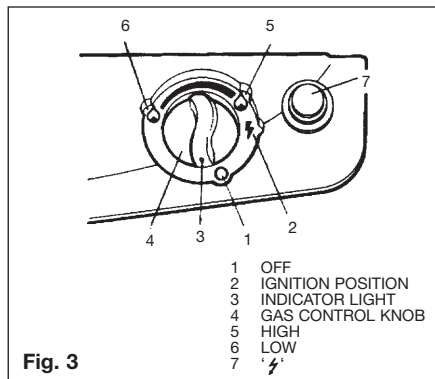


Fig. 3

To operate the main burner, turn the control knob further anti-clockwise and set it at the desired comfort level, between the high flame and low flame positions (5 & 6).

The main burner will 'cycle' automatically as required by the thermostat to maintain the set temperature, but the pilot light will always remain alight.

Turning off the heater

Turn the control knob fully clockwise to the '•' position (1).

FANMASTER

General Description

The Fanmaster is an electric heating and blown air system controlled by the slider switches on the front case of the heater (Fig. 4).

The automatically controlled fan distributes warm air around the caravan via ducting. The air is heated either by the Fanmaster's own electric element or by the Carver gas fired heater. The Carver gas fire and the Fanmaster can be used at the same time providing the fan is in operation.

The built-in elements are automatically or manually switchable between 0, 1kW and 2kW and require a 230V AC mains supply drawing a maximum of 8 amps at 2kW. The fan requires a 12V DC supply and will take 1.5A at maximum speed.

When using electric heating the caravan temperature is regulated by the thermostat mounted at the bottom right of the installation box but when using the gas heating the temperature is controlled by the gas heater thermostat. The night setting is a 1kW convector heater setting. In the summer the fan may be operated without any heat input to distribute cool air.

The air ducting outlets are generally of the butterfly type and may be opened or closed by adjusting the butterfly valves. Twisting the disc in its housing directs the flow in the direction required.



Fitted Equipment

One outlet on each leg of the air ducting layout must be kept open at all times.

Note:

Mains hook-up is needed for positions 2, 3 and 4, the current consumption will be approximately 4 amps for positions 2 & 3 and approximately 8 amps for position 4.

If you suspect that your mains hook-up is inadequate to supply the 8 amps required for position 4 in addition to your existing mains load, then for initial warm-up, use the Carver gas heater on a high setting and the Fanmaster on the position 1 setting.

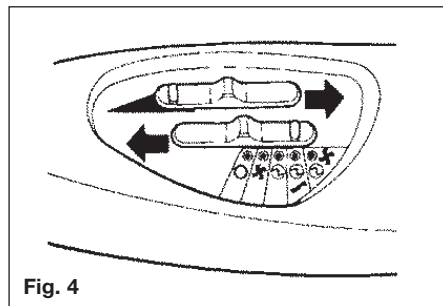


Fig. 4

When comfortable change to either positions 2 or 3 and turn the gas heater off.

Typical mains current consumption is:

Carver Cascade 2 water heater	3.6A approx.
Travelling kettle	3.2A approx.
Battery charger	1.0A approx.

FANMASTER CONTROLLER OPERATIONS (Fig. 2)

POSITION	OPERATION (without gas)	OPERATION (with gas)
0	Off	Gas convector
1	Manual fan speed - Temperature slider governs the fan speed. For cool air distribution.	Blown hot air distribution
2	1kW electric convector heating, no fan. Temperature slider selects desired room temperature.	Electric and Gas convection, but a high gas heater output will inhibit the electric heating to maintain safe operating temperatures.
3	1kW electric fan heating, fan remains slow.	Electric and Gas blown distribution. Fan speed adjusts automatically based on outlet temperature.
4	2kW electric fan heating. Fan automatically adjusts speed to suit.	Electric and gas blown distribution. Fan speed adjusts automatically.

Portable colour TV	0.3A approx.
60w light bulb	0.3A approx.
Fanmaster on position 4	8.3A approx.
Fanmaster on position 2 or 3	4.2A approx.

The normal mains supply to UK sites are rated at 16A but some sites have only a 10A capacity.

Servicing

In order to ensure that your heater continues to operate effectively, you will need to arrange for it to be serviced at least once a year by a competent and trained service engineer. By law no-one is permitted to deal with the installation and servicing of gas appliances unless they have proven competence. Contact your nearest caravan distributor if service or repair is required.

Safety

To prevent over-heating of the electric elements at least one warm air outlet must be open at all times. It is recommended that one outlet should be of the non-closable type and not a butterfly.

If all the outlets are closed the self-hold thermal trip will switch off the power to the elements. If this happens, open the outlets, switch the heater power off and wait until the unit has cooled down, the unit will then reset itself.

Make sure that clothing etc. is kept clear of the back of the heater.

Fitted Equipment

Warranty Conditions

The space heaters are covered by a two year guarantee from the date of purchase of the appliance or the registration date of the vehicle in which it is installed.

The guarantee is liable for all manufacturing faults and defective components.

We strongly advise that all repairs on the unit are carried out by authorised Service Centres.

The guarantee does not cover installation errors, tampering or damage caused by frost.

PRIMUS AQWE6 (AQUAFLEX) HEATING SYSTEM

Please read through the following operating instructions carefully before starting the heater.

General

The AQWE6 (Aquaflex) is a modern heater intended for the supply of central heating and domestic hot water for caravans/motor homes. The heater is integrated with a 9-litre domestic water heater and is equipped 1+2 = 3 kW electrical heating coils. The gas burner operates in three stages of 2, 5, 6 and 7 kW. Regulation is fully automatic, and the heater drops to a lower stage the closer one approaches the selected temperature. This means that the heater operates very quietly and with low electrical power and gas consumption for most of its operating time.

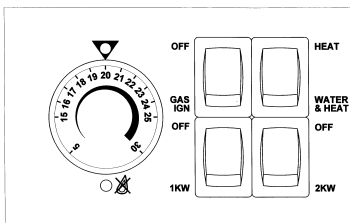


Fig. 1 Control Panel

Control panel

The heater is regulated via the control panel, which is integrated with the PMS2000GP control system (Fig 1). The control panel has 4 switches for setting the desired functions and a knob for setting the desired temperature. To reach 20°C set the turning knob accordingly. The control range is approx. 5-30°C.

GASIGN = Gas ignition will take place if heating is required

1KW = 1 kW electrical coil connected if heating is needed.

2KW = 2 kW electrical coil connected if heating is needed.

WATER & HEAT = Tap water heating will be given priority.

HEAT = Heat will be produced when required.

GASIGN means that the gas heater will start if heating is required. This switch should be in the On position at all times, except if the gas heater is not required to operate for whatever reason.

1KW and **2KW** means that the electrical heating coils will be switched on as heating is required. Both 1 and 2 kW electrical heating has to be selected when 3 kW is required.



Fitted Equipment

Note. The choice of electrical power is ultimately governed by the current available from the site supply. A 5A outlet can allow 1000W, a 10A allows 2000W and a 16A allows 3000W.

WATER & HEAT means that heating tap water takes priority over room heating: When larger amounts of hot water is required for showering, washing or such the this button should be in the ON position. During cold periods enough hot water is normally produced at the same time as the living area is heated so it can be set in the HEAT position and it should always be in the HEAT position when no water is fed into the water heater. Heat will still be produced if the thermostat is not turned down.

HEAT. Hot water will be produced, as described above, as a function of the requirement to heat the living area except when the outside temperature is high and no heating of the living area will be required. Then the setting should be WATER & HEAT and the thermostat turned down.

Both gas and electric can be connected at the same time if so desired.

NB. The programmable timer unit must be in the ON position to operate the heating system. (see Programmable Timer Instructions)

Mode of operation of the heater

Control of the heater takes place fully automatically once the basic setting described above has been made. If both electrical and gas heating is selected priority is given to electrical heating.

If the setting has been made for automatic water heating, WATER & HEAT, priority will always be given to hot water. Except in the case of a living area which has fully cooled down, when the heater will prioritise room heating until the heat in the room has reached an acceptable level. The heater will then check the room temperature and water temperature alternately and will generate room heating or hot water as required. This means that hot water is always available, and that room heating is provided as required. It takes about 15-20 minutes to produce hot water starting from a fully cold system.

The temperature of the hot water is limited to 70°C. Note that 70°C is a high hot-water temperature and precautions should be taken during use.

If the red lamp lights up, this indicates that the heater has gone into safety mode as a consequence of the gas heater having attempted to ignite and having failed to ignite or that the built in secondary overheat thermostat has acted. This is usually because the gas supply has run out, but it

may also be caused by the presence of air in the gas line or by a blocked gas supply or that the heater has been running without fluid.

Turning the GASIGN Off and On should normally restart a tripped gas heater. Note that for the secondary overheat thermostat the heater has to cool down.

Starting the heating system

1. Make sure that the system has a power supply (12 V/220 V)
2. Open the gas cylinder
3. Check that the heating system is filled with water/glycol (60/40)
4. Set the desired temperature.
5. Turn on the desired function on the switches.
6. If optional Timer is installed check that it is turned to On. (See Timer instructions)

Shutting down the heating system

1. Turn GASIGN and 1KW and 2KW switches Off. (If Timer is installed you only need to turn it Off)
2. Close the gas cylinder
3. Empty the water heater if there is a risk of frost
4. Switch off the supply voltage

Filling the water heater

1. Ensure that the drain valve of the heater is closed
2. Start the fresh water pump
3. Open a water tap and leave it open until water arrives. If a mixing valve is present set it to the hot position and allow filling to take place as described above.

Emptying the domestic hot water heater

1. Switch off the fresh water pump. When at risk from frost and heating is turned off, always drain the domestic hot water from the boiler
2. Open the drain valve on the heater by rotating the red knob by two clicks in an anti-clockwise direction (Fig.2)

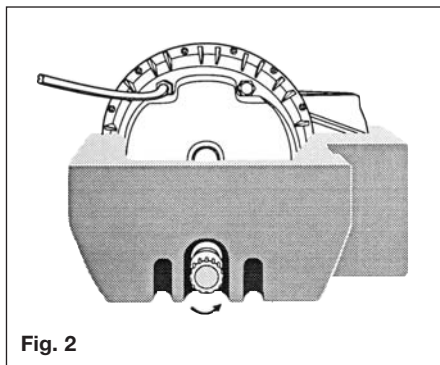


Fig. 2

3. Open all the hot water taps.
4. Check that water is running in the drainage pipe, (The easiest way is to look under the vehicle). This is particularly important during the winter, when snow and slush may block the pipe.

Maintenance of domestic Hot water heater

The heater may be descaled with vinegar or formic acid, or alternatively with a special descaling agent.

The agent is added to the fresh water that is circulating through the system. After descaling, the system is flushed with clean water. **(Do not use agents containing bleach)**. The domestic hot water heater can be removed from the main heater without affecting other functions. Depending on the position of installation the heater may require removal to provide access to the domestic hot water heater tank.

Note. The exhaust outlet in such a case must be removed and refitted. The small O-ring in the exhaust-connecting piece must be replaced whenever the exhaust outlet is removed.

The domestic hot water heater can be washed out and refitted. Check that the O-ring is undamaged before fitting.

Note: Only nuts with metal friction locking may be used. Check that the domestic hot

water heater is leak-proof after fitting by pressurising the system.

Electrical coils

The heater is equipped with 2 electrical coils, with an output of 1000 + 2000W. Regulation is taken care of automatically by setting the switches as described earlier. The electrical coils have a mechanical overheating protection device capable of tripping if the system is operated without water.

Pressing the red button on the side of the heater (Fig.3) performs resetting of the tripped overheating protection. Resetting is only possible after the system has cooled down, and the button must be pressed firmly. If the protection trips once more, the cause of the fault must be investigated. Consult a specialist.

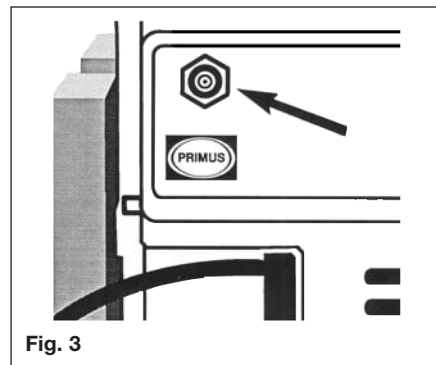


Fig. 3



Fitted Equipment

The heater must only be connected to the mains via the integrated 3 way connector provided.

If the cover to the electrical heater is removed the mains must be disconnected.

Important Note:

Any interference with and modification to the heater may lead to serious functional problems. Changes to the gas or exhaust components can pose a direct risk to life, and Primus declines all responsibility in the event of such changes being made.

1. The guarantee lapses with immediate effect if any work is performed other than by a specialist.

2. Use only Primus original spare parts.
3. Only a specialist must carry out repairs.
4. The small O-ring must be replaced if the exhaust outlet is dismantled.
5. The gas installation and any tests must conform to national requirements.
6. Keep the exhaust outlet and the air inlet free from dirt, snow and ice.
7. The heater must not be in use when refuelling and when in the garage.
8. The domestic hot water heater is equipped with a safety valve, which opens at approx. 3 bar. (Any drainage takes place via a drainpipe through the floor.)
9. The heater must be run with water/glycol (60/40) in the system at all times. If the heater is operated dry, it will normally be stopped by the operating thermostat. The thermostat will close after cooling, and the heater will then function normally provided that water is present in the system. If the operating thermostat fails to trip for any reason in the event of the system overheating, the heater will be stopped by a built-in secondary overheat thermostat. A red LED on the control panel indicates this. The electrical cartridge has a separate overheating protection.

Technical Data	AQWE6	Technical Data	AQWE6
Gas	I3BP /I3+	Max gas consumption	210/420/580 g/h
Working gas pressure	30 mbar/28-30/37mbar I	Number of steep electric heater	3
Wall exhaust	Yes	Output electrical power	1/2/3 kW
Volume Boiler	9 lit	Working voltage	12 V = /230 V AC
Heating-up time hot water	20 minutes	Electric power consumption 12 V	300/400/750 mA
Max D: H: W. pressure	2,8 bar	Electric power consumption 230 V	5/10/16 A
Length x Width x Height	500 x 400 x 300	Exhaust length max.	45-mm
Weight (without water)	15,1 kg	Exhaust diameter	54,3-mm
Number of steps in gas burner	3	Air inlet diameter	88,3-mm
Max power	2.6/5.0/7.0 kW		

Fitted Equipment

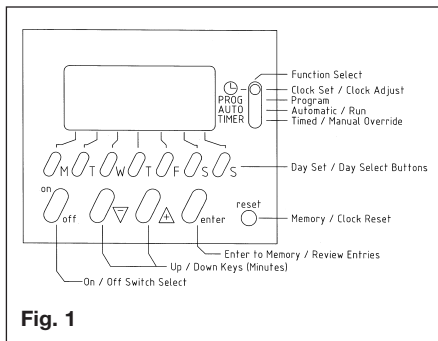


Fig. 1

PROGRAMMABLE HEATING TIMER (USER INSTRUCTIONS)

(Fig.1)

Features: -

- 7 Day / 24 Hour Programmable Timing
- 12V DC Operation
- Manual and Timed Override Option

USER INSTRUCTIONS

Setting the Clock: -

1. Move the Function Select Slider Switch into the top "Clock set / Clock Adjust" position indicated by a Clock Face symbol.
2. Set the day by pressing the corresponding day button M = Monday, T = Tuesday, etc.

3. Set the time by using the + and - arrow keys to increase or decrease the time shown until the correct time is reached (Holding the + and - keys in will Scroll quickly to the desired time)

Programming the Heating Timer: -

1. Move the Red slider switch to the Position Marked "PROG" (Program).
 2. Using the + and - Arrow Keys set the first Program time, the ON time (note - ON is shown in the top right corner of the display)
 3. Set the Day or Days this switching time should be active, using the Day Select buttons.
- (Note - an active day will appear as mark at the bottom of the display corresponding to a day select button.)
4. Press the Enter Key to store this information. After pressing the Enter key the display will change, ready to set the next time. OFF or ON will be shown in the top right corner indicating which time is next.

5. The next switching time can now be programmed by repeating steps 2, 3 and 4.
6. Run the programmed switching sequence by moving the Function Select Slider to the "Auto" position. The module will now

carry out the switching operations as programmed, displaying the current time along with the state of the switch i.e. ON or OFF.

Note - the Time display will not be seen if 12V DC is not present.

Timed / Manual Override.

This function gives the ability to Manually override the Timer switch Program turning the Heating system ON or OFF, and also allows the user to set this override to last for a timed period (set in hours)

Manual Override: -

1. Move the Function select slider down to the "Timed / Manual Override" position. The display will read - h with ON or OFF to the Right (depending on the current switch state).
2. Change the current switch state press the "On / Off Switch Select" button the display will change to read the new switch state on the right side. This timer will remain in this state until the Switch Select Button is pressed again or the Function select slider is returned to the "Auto" position and a switching program is run.



Fitted Equipment

Timed Override: -

1. Move the Function Select Slider down to the "Timed Manual Override" position. The display will read - h with ON or OFF to the Right (depending on the current switch state).
2. Set the override duration using the + and - "Up / Down Keys" the time is shown in (h) hours and (d) days and the set time can be from 1 to 23 hours or 1 to 27 days.
3. Change the current switch state to the override state by pressing the "On /Off Switch Select" button.
4. Return the Function select slider to the "Auto" position. The override will start ONLY when the Function Select Slider is returned to the "Auto" mode, when in auto mode the ON / OFF display will flash to show the override state.

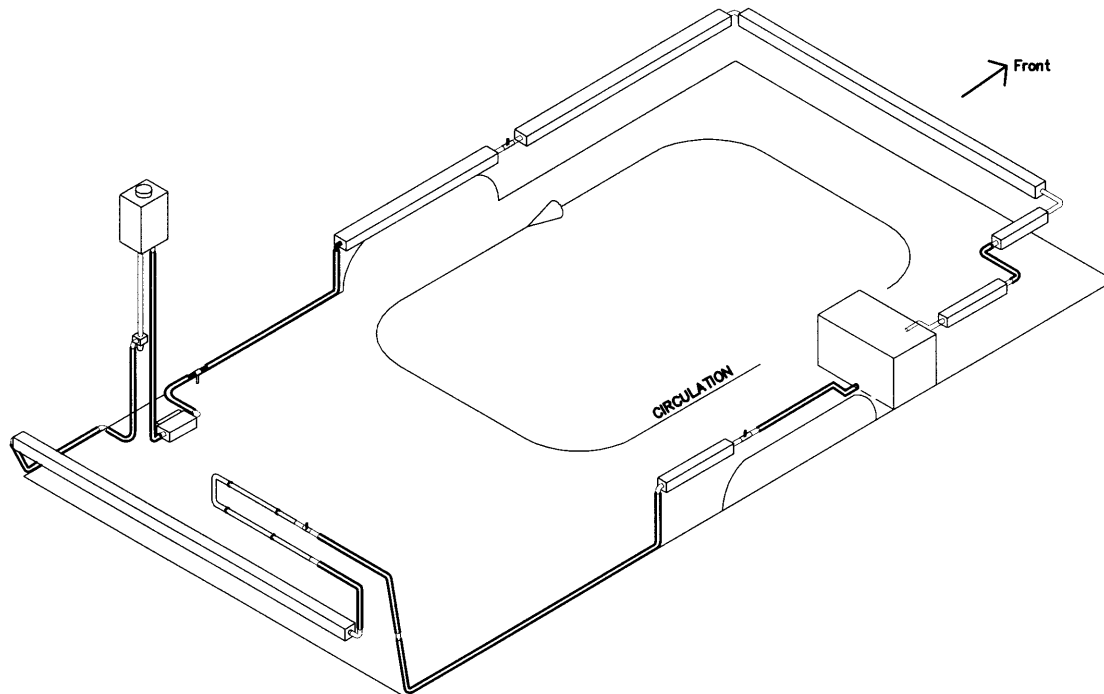
Note on Duration: - If X hours are selected, the override timer decrementation will start on changing mode.

If X days are selected, the override timer decrementation will start at midnight (the present day counting for a whole day).

Power Supply

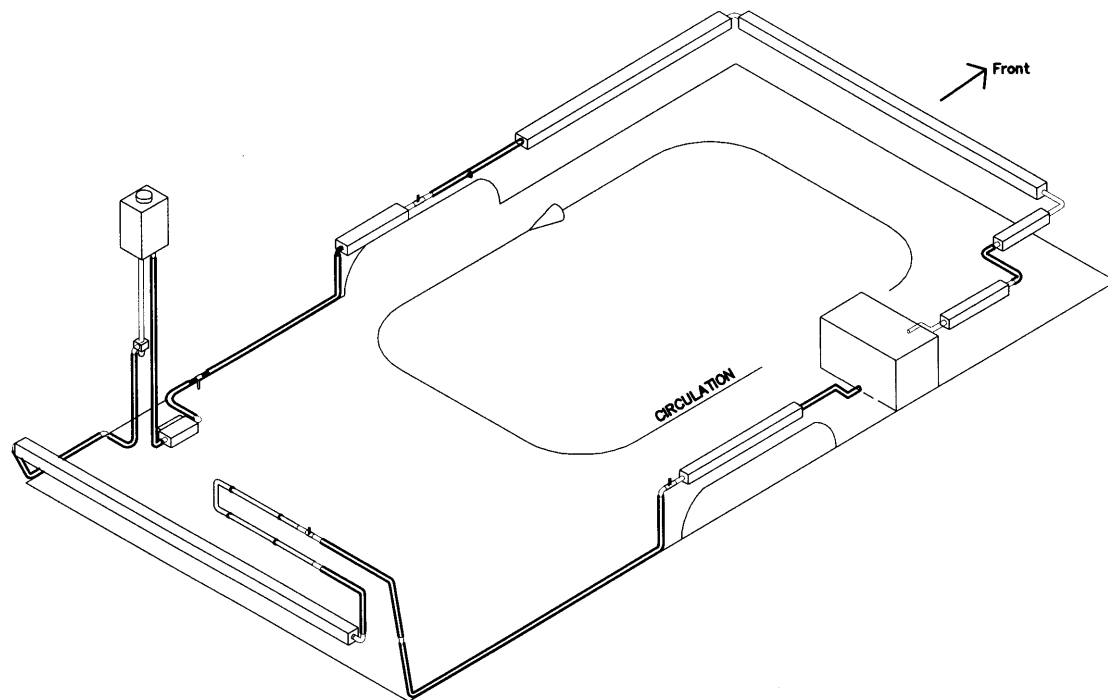
The Programmable Timer Module requires a 12v supply to operate fully, without this supply switching actions will not take place and the display in "Auto" Mode will not appear. The unit is fitted with internal battery backup of 25000hrs minimum reserve this will retain all programming and allow new programming when a 12v supply is not present.

PRIMUS HEATING SYSTEM



Fitted Equipment

PRIMUS HEATING SYSTEM



THETFORD CASSETTE PORTA POTTI

INTRODUCTION

The Cassette Porta Potti is constructed of high quality plastics for durability and has a high gloss finish that is easy to clean and maintain. The unit consists of two sections, a permanently installed toilet system and a slide out waste holding tank — CASSETTE.

The toilet section includes a seat and cover, flush and valve blade opener knob, toilet tissue compartment and holder, waste level indicator, built-in toilet fluid storage compartment, a drip tray — a drain tube assembly and a fresh water tank.

The unique Cassette section is located underneath the toilet and is removed for emptying from outside the caravan through an access door. A rotating pour-out spout, automatic holding tank vent, air release valve, valve blade, carrying handles and hand grips are incorporated into the Cassette.

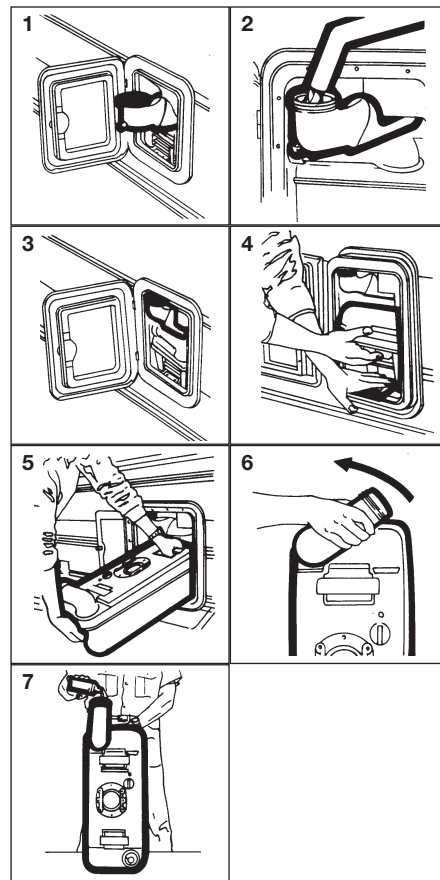
PREPARING FOR USE

1. Open access door on the side of the caravan and swing out fresh water fill funnel.
2. Fill fresh water tank using a hose or jerrycan until water funnel level reaches neck. Tank capacity is 15 litres. Aqua Rinse may be added to improve cleaning of bowl and flushing of unit.
3. Replace cap. Swing water fill funnel inward until it touches side of water tank.
Note: 150ml of water will remain in fill bottle when fresh water tank is empty.
4. Next add Aqua Kem to Cassette for controlling odours. Depress retaining clip.
5. Remove cassette by pulling straight out. When Cassette hits stop, tilt downward slightly and remove (stop for safety when Cassette is full).
6. Position tank vertical and swivel pour out spout upward.
7. Remove cap. Remove deodorant from storage compartment. Add 100ml of Aqua Kem or 120ml of Aqua Kem Bio through pour out spout. Add small amount of water through spout to cover tank bottom. Replace cap and return pour out spout to its original stored position.

Note: As an alternative deodorant can be added to Cassette through the valve blade opening. Hotter weather or longer retention time may require addition of more Aqua Kem.

CAUTION: Do not add Aqua Kem Concentrate or Aqua Kem Bio directly into toilet bowl while Cassette tank valve blade is closed. Pressure due to heat and altitude change can build up in the Cassette tank causing bowl contents to splash upward upon opening the valve blade, if opened too fast. Before each use, open and shut the Cassette valve blade to vent the tank

Fitted Equipment



Fitted Equipment

8. Slide the Cassette, pour out spout facing outside into the caravan through access door. Never force insertion or removal of the Cassette tank, damage to system can occur.
9. Make sure the Cassette is secured by the retaining clip. Close and lock access door.

OPERATION

Flushing (Electric Models)

10. Before using the toilet we advise to add some water to the bowl by pressing down the flush knob. This avoids marking the bowl. Water will stop flowing when knob is released.
11. To flush after use, press the flush knob down while turning in an anti-clockwise direction. The turning motion opens the valve blade, emptying the toilet bowl. This procedure results in the best bowl rinse and most efficient use of water. After flushing, turn the knob in a clockwise direction to close the valve blade. The toilet can also be used with valve blade open, which allows the waste to go directly into the holding tank.

Flushing (Manual Models)

10. Before using the toilet, we advise you to add some water to the bowl by turning the flush knob in clockwise direction. When flush knob is released it will turn automatically back.

11. To flush after use, turn the valve knob in anti-clockwise direction and turn the flush knob. This procedure results in the best bowl rinse and most efficient use of water.

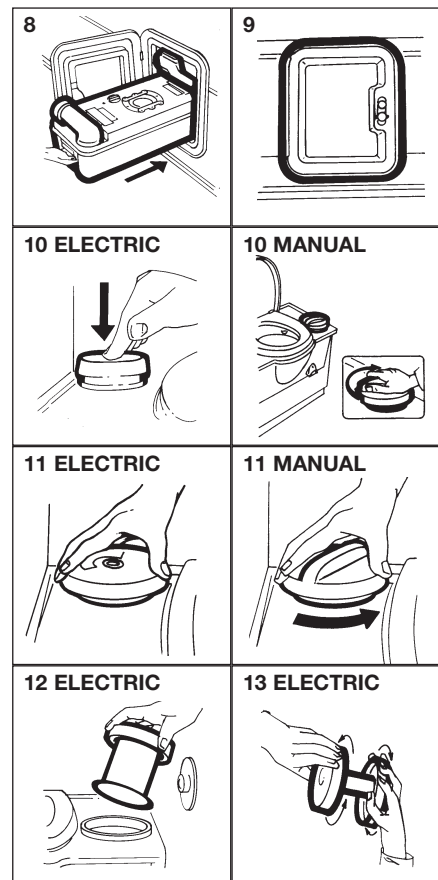
TOILET TISSUE

12. Toilet tissue is stored in the specially designed storage compartment that helps keep tissue clean and dry (electric models only). Tissue can also be suspended on a tissue holder using the special wall mount bracket, if desired.
13. To replace tissue, remove tissue holder from compartment by pulling up on tissue cover. Hold bottom of tissue holder in one hand and cover in the other, and turn in opposite directions until you hear a click. Pull apart. Place tissue on holder, insert prongs of cover into holder. Hold cover and holder and twist in opposite direction until locked. Aqua Soft toilet tissue is recommended for best results.

Emptying the Cassette

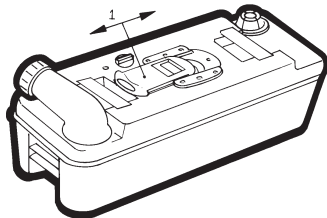
The Cassette capacity is 20 litres and should be emptied when the waste level gauge indicator goes from green to full red.

The gauge does not begin to move from green to red until the tank is over half full.



Caution: Do not allow Cassette to become overfilled, see Trouble Shooting section for emergency emptying procedure.

The holding tank features a unique sliding cover (1) which guarantees optimal hygiene. The sliding cover moves automatically when the holding tank is inserted. When holding tank is removed, the cover automatically assumes its correct position. To clean the holding tank, you may remove the cover manually by sliding it towards the pour-out spout.



To empty Cassette be sure that the valve blade is in the closed position.

14. Open the access door on side of caravan.
Depress the retainer clip, pull Cassette until stop, tilt and remove Cassette.

15. Carry the Cassette using the lower carrying handle, pour out spout up, to a normal household type toilet or other authorised disposal point. Set Cassette in vertical position on the ground and rotate pour out spout upward.

16. Remove spout cap. Grasp unit by upper carrying handle nearest to pour out spout. Place other hand on upper rear grip so that the air relief valve button can be depressed with thumb while emptying, to ensure smooth outflow of tank contents. When empty, rinse tank and valve blade with water.

Note: Depress air release valve button only when pour out spout is pointed downwards.

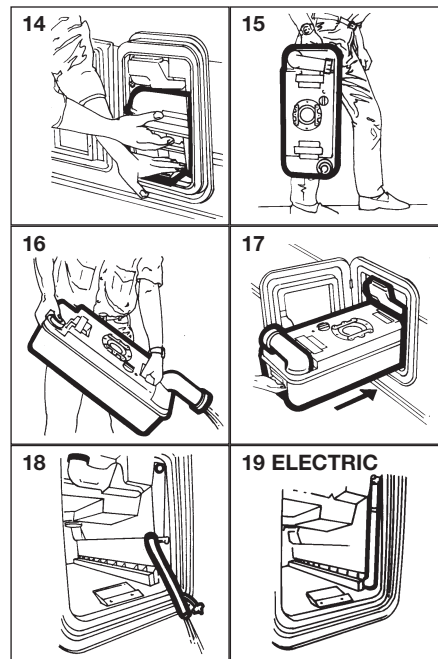
17. After preparing for use, slide the Cassette into the caravan. Check to make sure that the retaining clip secures the tank in a locked position. The pour out spout end of the tank should be visible through the access door opening. Add water to the fresh water tank as outlined in "Preparing for Use" section. Close and lock access door.

CLEANING AND MAINTENANCE

No routine maintenance is required on the Thetford Cassette Porta Potti. The use of Aqua Rinse helps to clean and protect the toilet bowl, valve blade and seals during flushing. Do not use strong household detergents or cleaners with chlorine, solvents or acid contents, as they will damage valve seals.

Empty Cassette and rinse tank with clear water. Use a mild soap to clean toilet bowl, seat and cover, as well as exterior of toilet

Fitted Equipment



unit and Cassette. Replace tank inside caravan.

Note: Pour-out spout and vent plug can be removed. Seals should be greased if necessary with acid-free vaseline.

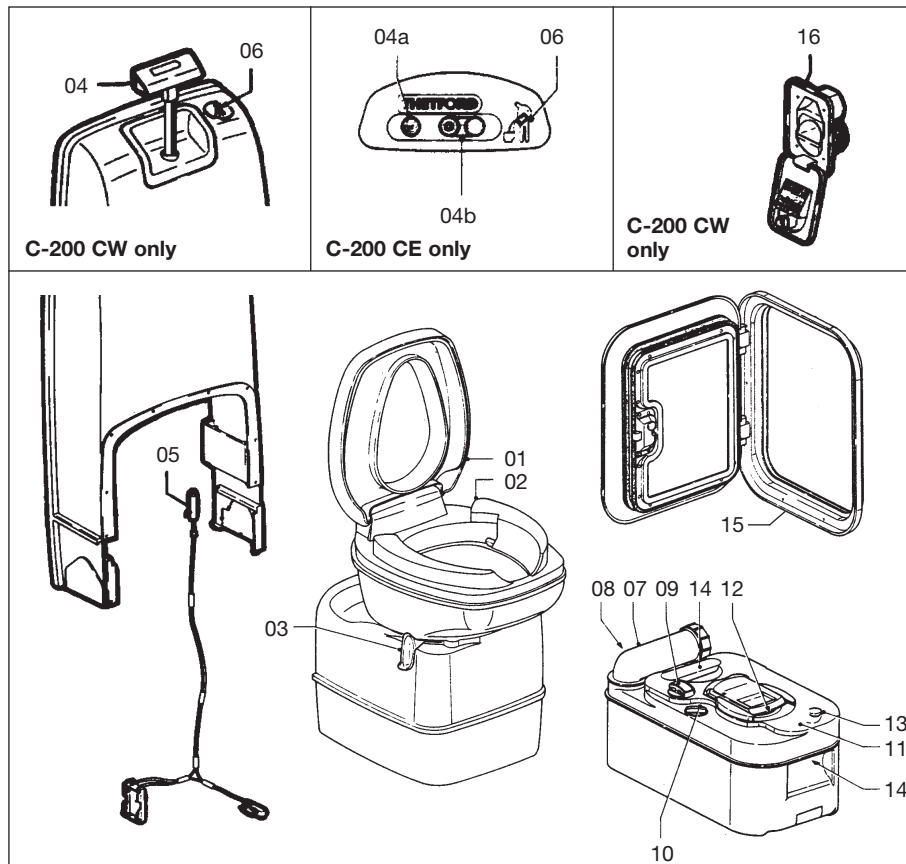


Fitted Equipment

THETFORD CASSETTE C-200 CW (Manual) and C-200 CE (Electric)

FEATURES

1. Removable seat and cover.
2. Rotatable bowl.
3. Valve blade handle: opens and closes valve blade.
4. Flush-handle activates the flush by lifting and pushing down the handle.
- 4a **C-200 CE.** Flush button: activates flush.
- 4b **C-200 CE.** Valve blade buttons: open and close valve blade electronically.
5. Power-supply for the waste-level indicator: two batteries, type: Penlite 1,5V AA alkaline.
6. Waste-level indicator: indicates when holding tank requires emptying.
7. Rotating pour-out spout: makes emptying holding tank easy and convenient.
8. Upper carrying handle
9. Automatic holding tank vent: vents the holding tank when the tank is inserted in the toilet. This prevents under- or overpressure in the holding tank.
10. Valve blade opener.
11. Sliding cover: closes automatically when holding tank is taken out. Guarantees optimal hygiene.
12. Valve-blade
13. Vent button: vents the holding tank to avoid splashing while emptying.
14. Hand grip
15. Access door
16. Waterfill door



Fitted Equipment

CASSETTE C-200 CW AND C-200 CE

The toilet section of the C-200 includes a rotatable bowl, removable seat and cover, a console with a flush handle/flush buttons, a built in flush-watertank and a waste level warning indicator. Underneath the bowl, the valve blade handle is located.

PREPARING FOR USE

1. Open access door pull retaining clip upwards (fig. 1).
2. Remove holding tank by pulling straight out. When holding tank hits the stop, tilt front end downwards slightly and remove (fig. 2).
3. Position tank vertically and swivel pour-out spout upwards (fig. 3).
4. Remove the cap of the pour-out spout. Add required quantity of toilet fluid through pour-out spout then add approx. 2 litres of water through the spout to cover holding tank bottom. Replace cap and return pour-out spout to its original stored position (fig. 4).

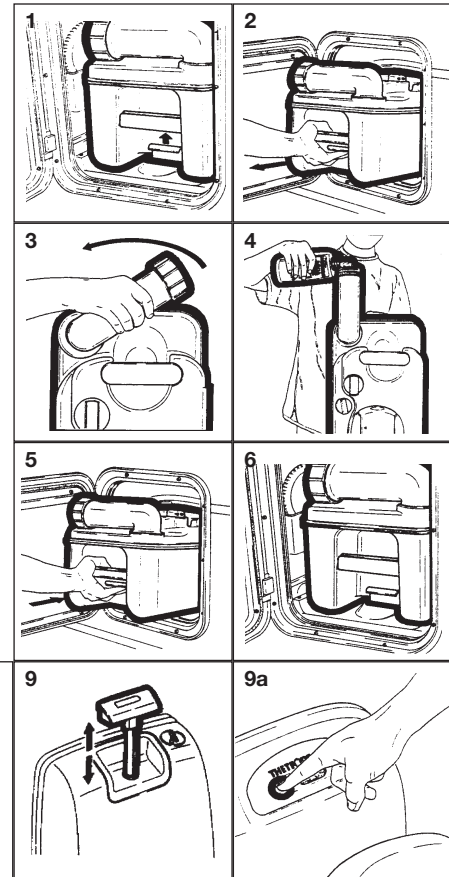
Note: Warmer weather or longer intervals between emptying the waste tank may require additional toilet fluid. Use only Thetford toilet fluid to achieve the best results.

Caution: Never add toilet fluid directly into toilet bowl.

5. Slide the holding tank into position through access door (fig. 5).
6. Make sure the holding tank is secured by the retaining clip (fig. 6).
7. Open the waterfill door and add 50 ml of Aqua Rinse. Aqua Rinse results in a better flush and improves the hygiene of the toilet. Then fill the watertank with fresh water using a jerrycan or a hose. Tank capacity is 7 litres (fig. 7).

OPERATION

8. Turn the bowl in the most comfortable position (fig. 8).
9. **C-200 CW only:** Before using the toilet it is recommended to flush some water into the bowl by lifting and pressing down the flush handle (fig. 9).
- 9a. **C-200 CE only:** Before using the toilet it is recommended to flush some water into the bowl by pressing and releasing the flush button (fig. 9a).



Fitted Equipment

10. After use open the blade by turning the blade-handle anti-clockwise (fig. 10).
- 10a. C-200 CE only: After use open the blade by pressing the 'open' button (fig. 10a).
11. C-200 CW only: To flush, lift the flush handle and press it down (fig. 11). After flushing, close the blade by turning the blade handle clockwise.
- 11a. C-200 CE only: To flush press the flush button (fig. 9a). After flushing, close the blade by pressing the close button on panel (fig. 11a).

The toilet may also be used with the valve blade open, which allows the waste to pass directly into the holding tank.

The waste holding tank is located underneath the toilet and is removed for emptying from the outside of the vehicle through an access door. A rotating pour-out spout, automatic holding tank vent, air release valve, valve blade, carrying handles and hand grip are incorporated in the waste holding tank. A sliding cover guarantees you optimal hygiene.

EMPTYING THE HOLDING TANK

The holding tank capacity is approx. 17 litres and the tank should be emptied when the waste-level indicator lights up. The waste-level indicator lights up when the holding tank contains more than 15 litres of waste.

CAUTION: Do not allow the holding tank to become overfilled. See trouble shooting section for emergency emptying procedure.

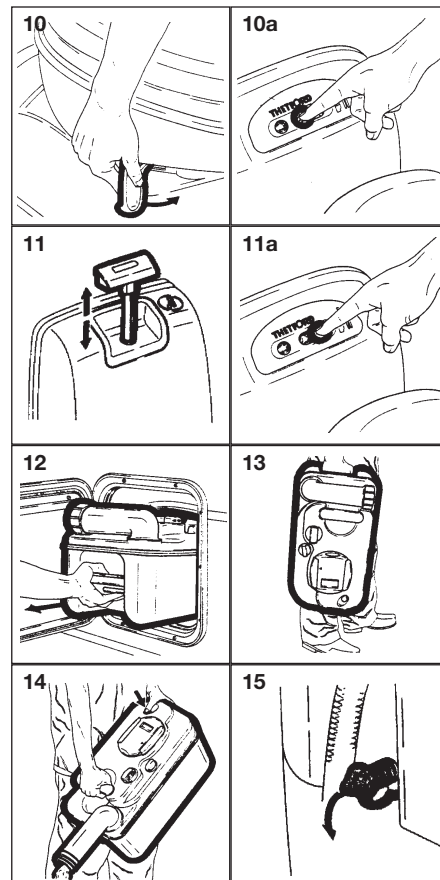
12. Open access door and remove the holding tank. The holding tank can only be removed when the valve blade is closed (fig. 12).
13. Carry the holding tank to a normal household type toilet or other authorized disposal point. Place the holding tank in vertical position and rotate pour-out spout upwards (fig. 13).
14. Remove the spout cap. Grasp unit by upper carrying handle nearest to pour-out spout. Place other hand on upper rear hand grip so that vent button can be depressed with the thumb while emptying. This ensures a smooth outflow of the tank contents. (fig. 14).

Note: Only depress the vent button when pour-out spout is pointed downwards.

Rinse the holding tank with clean water. For preparing for use again, see steps 1 to 7.

CLEANING AND MAINTENANCE

The lipseal and the seal of the automatic vent are made of rubber and therefore these parts need regular maintenance (depending on frequency of use, once or twice a month).



Lipseal: Remove the sliding cover. Open the valve-blade by turning the blade-opener knob anti-clockwise. Clean the seal with water. Dry the seal and grease with silicone spray/oil or vegetable oil.

Seal of automatic vent: Turn the automatic vent 60° anti clockwise and remove gently. Clean the seal with water. Dry the seal and grease with silicone spray/oil or vegetable oil.

To clean the holding tank, empty the tank, and rinse with clean water. Use a mild soap to clean toilet bowl, seat and cover, as well as exterior of toilet unit and holding tank.

NOTE: Do not use strong household detergents or cleaners that contain chlorine, solvents or acid contents.

WINTERING/STORAGE

The Thetford Cassette C-200 CW is easily winterized for storage.

Place appropriate size container under the drainplug. Empty the fresh water tank by taking out the drainplug (fig. 15). When the tank is empty lift and press down the flush handle a few times to empty the pump. Empty the holding tank and clean the unit as described in CLEANING and MAINTENANCE. Clean the seals and grease them after drying (see CLEANING and MAINTENANCE).

Leave the blade of the holding tank open.

Do not replace cap on the pour out spout, to ventilate the holding tank. (Also grease the seal of the pour out spout cap.)

COLD WEATHER USE

The toilet can be used in cold weather conditions provided that the toilet is in heated surroundings. If this is not the case, you can use a nontoxic antifreeze (propylene glycol) or an antifreeze such as those used in car radiators. Add the antifreeze to the water in the tank. Add the quantity specified in the instructions, paying due regard to the safety instructions.

HIGH ALTITUDE AND WARM WEATHER USE

Pressure may build up in the holding tank if the tank is not inserted while driving at high altitudes or in warm weather conditions. The automatic holding tank vent will vent the tank when there is over- or under-pressure. High temperatures may require additional Thetford toilet fluid.

THETFORD WARRANTY

1. The Thetford Cassette is warranted for one year from the date of purchase, please fill in and return the warranty card.
2. The warranty covers replacement of defective or flawed parts and the inadequate performance of the toilet.
3. In case of a defect apply to an original dealer or Thetford Service Centre with proof of purchase.

4. Defects, which in our judgement occurred from misuse, negligence or accident, are not covered by the warranty. In addition, the warranty does not apply if the product is installed or handled improperly or if other than the prescribed toilet fluids have been used or if the product has been altered in any way or has been repaired by unqualified persons, or if the serial number and/or date has been altered or removed.
5. Should the original buyer wish to return to us parts believed to be defective, the parts should be sent prepaid. If we find the parts defective and covered by warranty, they will be repaired and returned. If warranty does not apply or has expired, a nominal charge will be made. Any transport costs are for the account of the owner.
6. Before returning product or parts they should be properly cleaned, in order to carry out inspection and repair.
7. No other warranty is given and no personal representative is authorised to make any warranty other than that is contained herein.

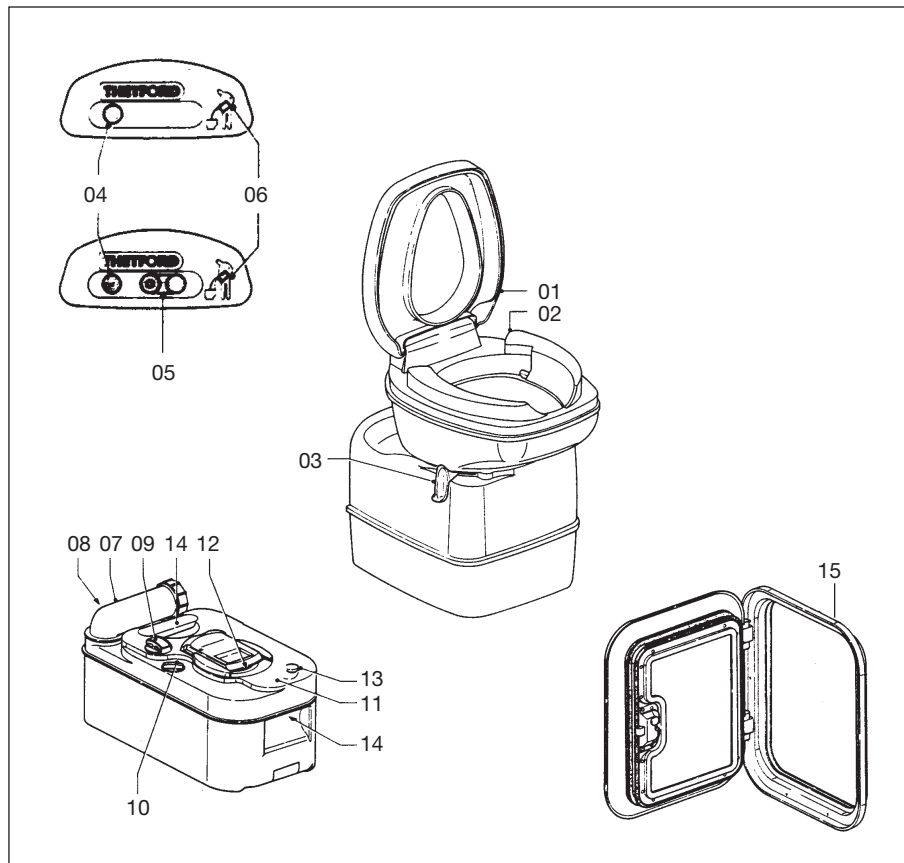


Fitted Equipment

THETFORD CASSETTE C-200 S

FEATURES

1. Removable seat and cover.
2. Rotatable bowl.
3. Valve blade handle: opens and closes valve blade manually.
4. Flush button: activates flush.
5. Valve blade button: opens and closes valve blade electronically.
6. Waste-level warning device: indicates when holding tank requires emptying.
7. Rotating pour-out spout: makes emptying holding tank easy and convenient.
8. Upper carrying handles.
9. Automatic holding tank vent: vents the holding tank when there is over pressure if holding tank is inserted into the toilet.
10. Valve blade opener.
11. Sliding cover: closes automatically when holding tank is taken out. Guarantees optimum hygiene.
12. Valve blade.
13. Press button valve: allows air in to avoid splashing while emptying.
14. Hand grip.
15. Access door.



Toilet Section

The toilet section includes a rotatable bowl, a removable seat and a control unit with a flush button and a waste level warning device. Under the bowl, the valve blade handle is located.

Preparing for Use

1. To remove holding tank, open the access door. Pull retaining clip upwards, (fig. 1)
2. Remove holding tank by pulling straight out. When holding tank hits the stop, tilt downwards slightly and remove. (fig. 2)
3. Position tank vertically and swivel pour-out spout upwards. (fig. 3)
4. Remove the cap of pour-out spout. Add required amount of toilet fluid through pour-out spout. Add small amount of water through spout to cover holding tank bottom. Replace cap and return pour-out spout to its original stored position. (fig. 4)

NOTE: Hotter weather or longer retention time may require additional toilet fluid. Use only Thetford toilet fluid to achieve the best results.

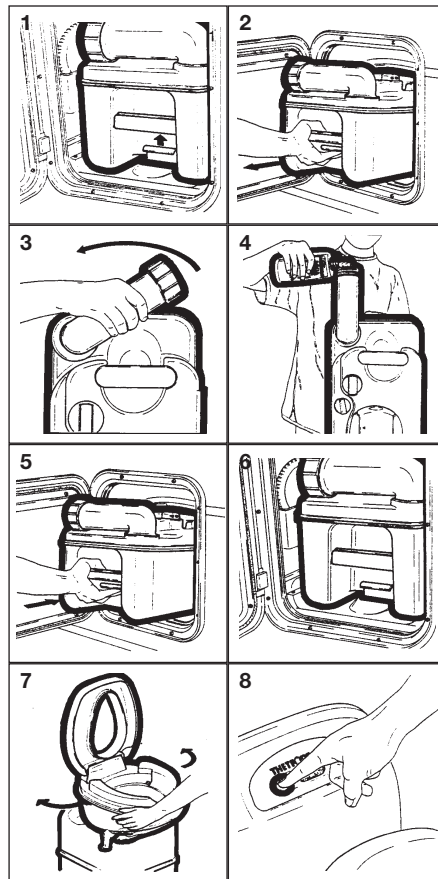
CAUTION: Never add toilet fluid directly into toilet bowl.

5. Slide the holding tank into the vehicle through access door. (fig. 5)
6. Make sure the holding tank is secured by the retaining clip. Close and lock access door. (fig. 6)

Operation

7. Turn the bowl in the most comfortable position, when necessary. (fig. 7)
8. Before using the toilet we recommend to add some water to the bowl by pressing the flush button. Flush will stop when the button is released. (fig. 8)

Fitted Equipment



Fitted Equipment

9. To open the blade, push on the left side of the blade opener button (fig. 9.) Blade can also be opened by turning the blade handle anti-clockwise (fig. 10).
10. To flush, press the flush button (fig. 8).

After flushing, close the blade by pushing the right side of the blade opener button (fig. 11).

The blade can also be closed by turning the blade handle clockwise (fig. 12).

The toilet can also be used with the valve blade open, which allows the waste to pass directly into the holding tank.

Emptying the Cassette

The holding tank capacity is approx. 17 litres and the tank should be emptied when waste-level warning device comes on. The waste-level warning device will come on when tank contains more than 15 litres of waste. As from that moment there is approx. 2 litres capacity left. This is equal to approx. 5 uses.

CAUTION: Do not allow Cassette to become overfilled. See trouble shooting section for emergency emptying procedure.

11. Open access door and remove holding tank.

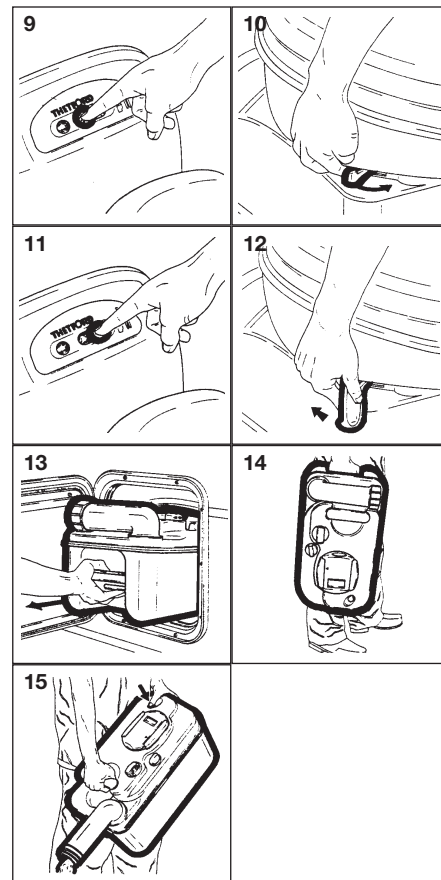
Holding tank can only be removed when valve-blade is closed. (fig. 13)

12. Carry the holding tank, pour out spout up, to a normal household type toilet or other authorised disposal point. Set the holding tank in vertical position and rotate pour-out spout upwards (fig. 14).
13. Remove spout cap. Grasp unit by upper carrying handle nearest to pour-out spout. Place other hand on upper rear hand grip so that air relief valve button can be depressed with the thumb while emptying. This ensures smooth outflow of tank contents (fig. 15).

Note: Depress air relief valve button only when pour-out spout is pointed downwards.

Rinse the holding tank with clear water.

For preparing for use again, see steps 1 to 6.



WINTERING/STORAGE

The Thetford Cassette C-200 is easily winterized for storage.

Place appropriate size container under the drainplug. Empty the fresh water tank by taking out the drainplug. When the tank is empty lift and press down the flush handle a few times to empty the pump. Empty the holding tank and clean the unit as described in CLEANING and MAINTENANCE. Clean the seals and grease them after drying (see CLEANING and MAINTENANCE).

Leave the blade of the holding tank open. Do not replace cap on the pour out spout, to ventilate the holding tank. (Also grease the seal of the pour out spout cap.)

COLD WEATHER USE

The toilet can be used in cold weather conditions provided that the toilet is in heated surroundings. If this is not the case, you can use a nontoxic antifreeze (propylene glycol) or an antifreeze such as those used in car radiators. Add the antifreeze to the water in the tank. Add the quantity specified in the instructions, paying due regard to the safety instructions.

HIGH ALTITUDE AND WARM WEATHER USE

Pressure may build up in the holding tank if the tank is not inserted while driving at high altitudes or in warm weather conditions. The automatic holding tank vent will vent the tank when there is over-or under-pressure. High temperatures may require additional Thetford toilet fluid.

THETFORD WARRANTY

1. The Thetford Cassette is warranted for one year from the date of purchase, please fill in and return the warranty card.
2. The warranty covers replacement of defective or flawed parts and the inadequate performance of the toilet.
3. In case of a defect apply to an original dealer or Thetford Service Centre with proof of purchase.
4. Defects, which in our judgement occurred from misuse, negligence or accident, are not covered by the warranty. In addition, the warranty does not apply if the product is installed or handled improperly or if other than the prescribed toilet fluids have been used or if the product has been altered in any way or has been repaired by unqualified persons, or if the serial number and/or date has been altered or removed.

5. Should the original buyer wish to return to us parts believed to be defective, the parts should be sent prepaid. If we find the parts defective and covered by warranty, they will be repaired and returned. If warranty does not apply or has expired, a nominal charge will be made. Any transport costs are for the account of the owner.
6. Before returning product or parts they should be properly cleaned, in order to carry out inspection and repair.
7. No other warranty is given and no personal representative is authorised to make any warranty other than that is contained herein.



Fitted Equipment

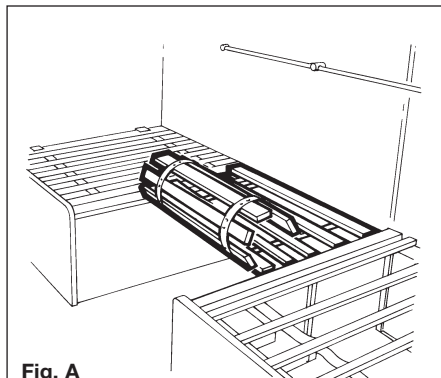


Fig. A

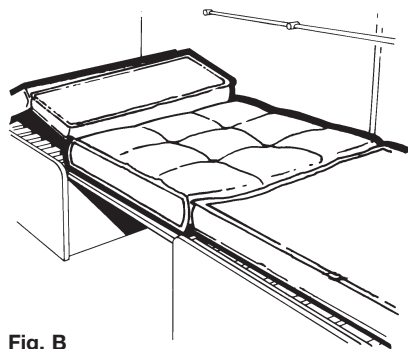


Fig. B

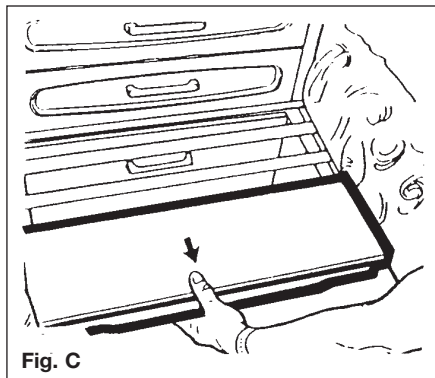


Fig. C

BEDDING

Sleeping bags and continental quilts can be compressed into small spaces and can be ready to use in minutes.

LOWER SINGLE BEDS ASSEMBLY

(Figs. A & B)

1. Unroll bed slat bundle and place between the recess in both seats.
2. Arrange seat cushions as appropriate.

DOUBLE BED ASSEMBLY

(Fig. C)

1. Grip front of slatted bed and walk backwards until bed is fully extended.
2. Arrange seat cushions as appropriate.

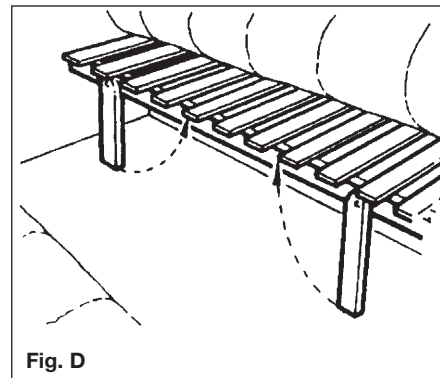


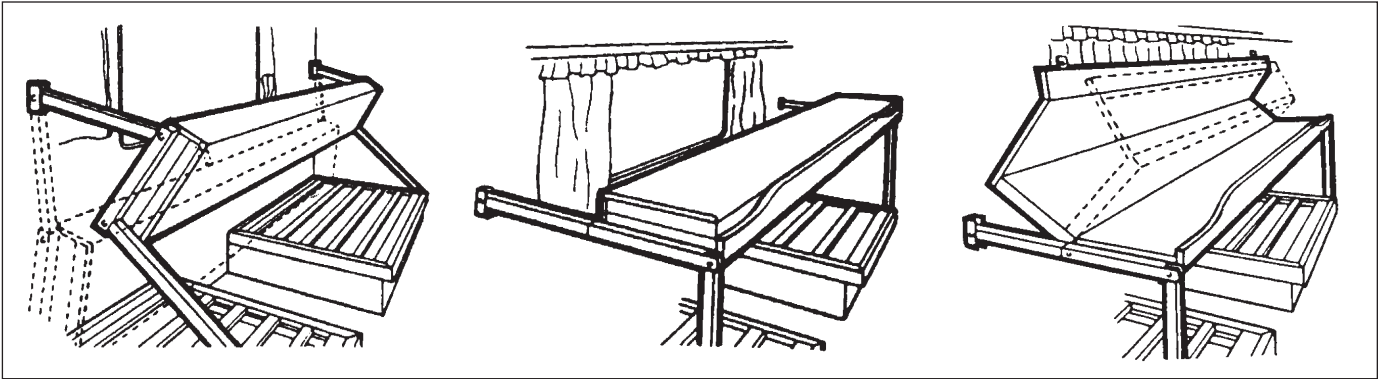
Fig. D

SINGLE BED (Fig. D)

Pull out 4" and allow backrest cushion to drop behind base cushion. This applies to certain models only.

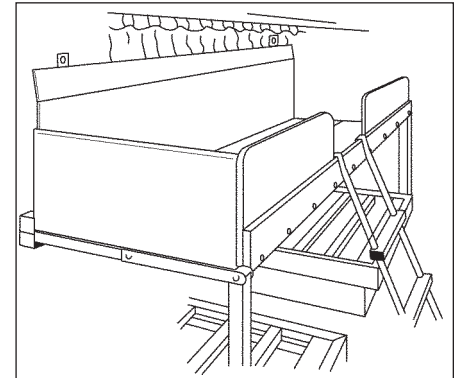
DOUBLE BED (Fig. D)

Extend the pull-out section of the single bed, and re-arrange the cushions. This applies to certain models only.

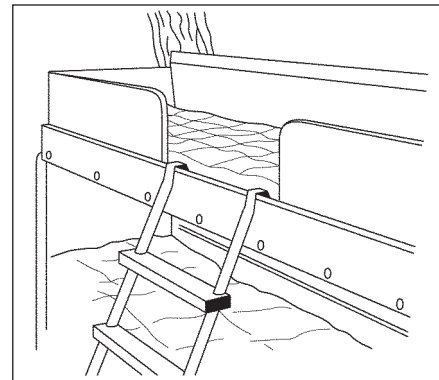
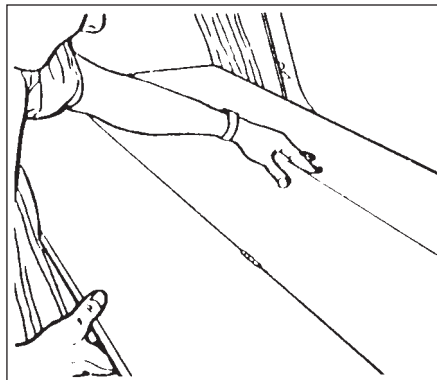
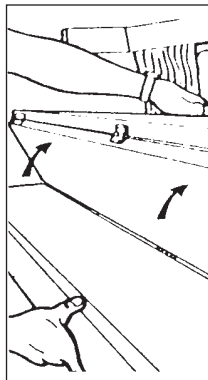
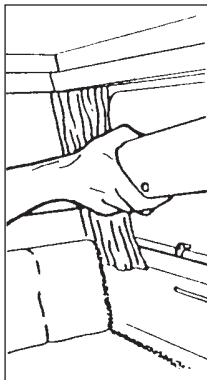


PULLMAN BUNKS

1. Release catches, one at a time.
2. Release press studs on the bed board.
3. Grasp the bunk as shown and pull carefully in direction of arrows.
4. The bunk is designed to automatically move into the correct position.
5. Where a bed board is fitted, unfold and make sure it is secured by press studs when lifted into position. (The bed board is required to protect both the occupant and the window from damage during use of the bunk.)
6. Locate safety boards.
7. Arrange seat cushions as appropriate.



Fitted Equipment



DROP DOWN BUNK

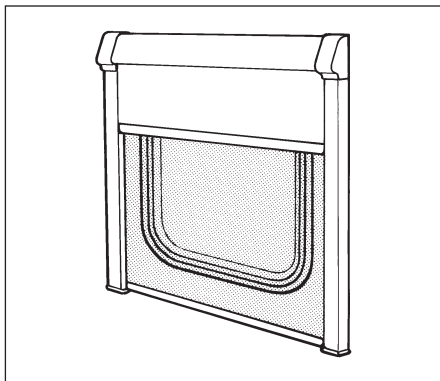
The bunks (if any) fitted to your caravan are guaranteed to a weight limit of 11 stones (70 kg).

1. Remove bunk from its stored position below lockers, taking care to draw out each side equally thus avoiding damage to the caravan walls.
2. Locate on bunk supports and unfold, ensure open bunk is pressed firmly into position and cannot slide out of bunk supports.
3. Locate safety boards.
4. Arrange seat cushions to suit.

On caravans with rear side windows fitted with cassette blinds, care must be taken to avoid damaging the blind frame. Lower the bunk bed (unopened) onto the rearmost section of the bunk support rails, slide the front of the bunk forward whilst at the same time unfolding it.

Ensure that your fingers are clear of the front upstand whilst opening and closing the bunk.

WARNING: Always ensure safety boards are located before entering the bunk.



DOUBLE CASSETTE BLINDS (SEITZ)

Blinds and Flyscreens

Flyscreen and blinds operate in the same manner. The flyscreen can only be 'fully up' or 'fully' down, but the blind also has an intermediate position.

To operate, pull down by holding the fingergrip(s), gently ease towards the window to locate the catches. To retract, pull down easing away from the window to release the catches and guide to the required position.

- **ONLY OPERATE BY HOLDING THE FINGERGRIP(S)** - pulling on one side will cause uneven running and snagging.

- **DO NOT ALLOW THE BLIND OR FLYSCREEN TO RE-COIL WITHOUT CONTROL.**
- It is not recommended that blinds and/or flyscreens are left in the down position for long periods, or when travelling, as this can result in fatigue of the spring.
- Clean the cassette, side track and fabrics with mild detergent and water.
- Lubrication of mechanism or spring is not required or recommended. However, if components should require cleaning, use only WD40 or similar with fluff-free cloth. Other lubricants may result in damage to fabrics and plastics.

Tension Adjustment

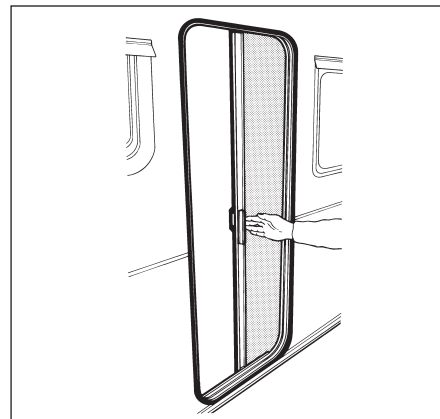
Remove plastic cover (if fitted) to locate tension lugs. The tension lugs have a slot and are located in the cassette on a 'bayonet' principle. Insert screwdriver into slot (ensure a good fit), turn lug clockwise to allow the spring tension to push the lugs just free of the cassette. Keep fingers away from screwdriver tip to avoid accidental injury. Spring can now have more or less tension applied as required.

If in doubt of tension to be applied, release all tension and re-start. In which case, with blind fully wound on the roller, apply 12 revolutions of lug (factory setting).

Refitting is a reversal of removal procedure.

For more detailed information, see manufacturer's instructions.

Fitted Equipment



DOORSCREEN

When drawing or releasing the doorscreen, care should be taken not to let it spring back freely, this may result in damage to the screen or its fittings.

Always pull the doorscreen close to the centre. It is not advisable to pull close to the top or bottom as this will cause snagging and uneven running.

Caution

When opening or releasing the doorscreen, care must be taken to avoid trapping fingers.

Do not allow the doorscreen to slam open.



Fitted Equipment

ROOF LIGHTS

When opening the roof lights, care must be taken to release the locking mechanism as the unit is raised.

Roof lights must be fully closed when towing.

Roof lights provide 12,500mm² of fixed ventilation each.

WINDOWS

All opening windows have two catch positions. The first position is for ventilation the second seals the window from ventilation and rain.

HEKI-2 ROOF LIGHT (SEITZ)

The lift/tilt roof light can be set in 3 positions by means of pneumatic springs.

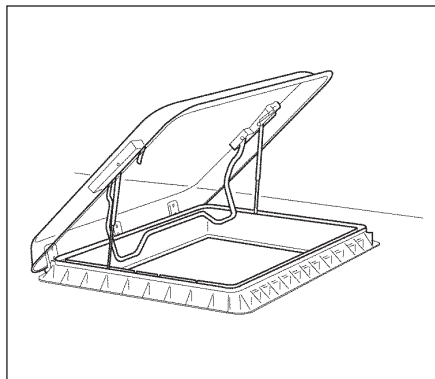
Position 1 lifts the pane 12mm without allowing rain to enter the caravan.

Position 2 sets the pane to a 150mm opening and locks with a bar.

Position 3 opens the pane through 55°.

A fully adjustable flyscreen and black-out screen are built into the inner frame. The flyscreen can be drawn independently and the black-out screen is variable for partial or full black-out.

Forced ventilation functions via a brush lined duct instead of a ventilated pane.



A cover hood can be fitted for winter protection.

Heki-2 roof lights provide 13,200mm² of fixed ventilation

THE OMNIVENT (12V) ROOFLIGHT

The Omnivent is a double glazed rooflight constructed from a synthetic ultra-violet screened material. Its side operating mechanism allows a completely free central opening with built-in fixed ventilation when closed.

Red Switch = Mode of Operation

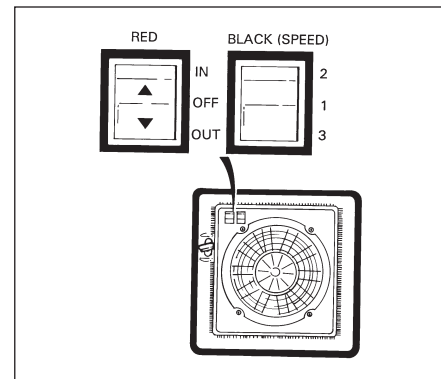
Induction (IN)

Expel (OUT)



Black Switch = Speed Control

1, 2 and 3



Omnivents give no fixed ventilation when set on induction.

THE BLIZZARD ROOFLIGHT

The Blizzard is an optional alternative to the Omnivent.

HAULTZHAUER ROOFLIGHT AND EXTRACTOR

The extractor is operated by a single ON/OFF switch.

THE BLIZZARD 1300 AIR CONDITIONER

Starting and function selection

1. Internal temperature control thermostat
2. Two speed fan switch
3. Main switch (Red light ON' Green light OFF) Push the switch '3': Red light 'ON' to switch the air conditioning on.

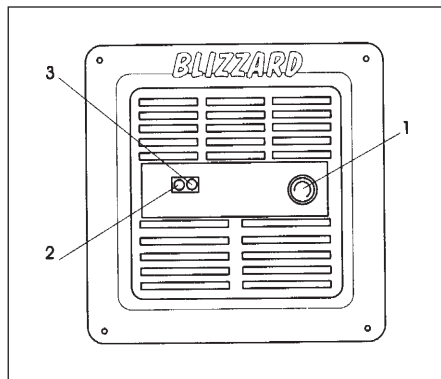
To set the required temperature adjust the RED/BLEU selector control knob against the indicator mark on the outer bezel. Airflow direction can be achieved fore and aft by adjustment of the air outlet louvers.

Push the switch '3' (Green light 'OFF') to stop the unit.

Attention

Never obstruct the air inlets and outlets

The air conditioning compressor runs during the refrigerating phase, if switched on and off at once it may get damaged. Therefore, it is very important to wait at least 3 minutes before attempting to switch it on again.



WARNING: Never introduce your hands or other object within the air inlet openings.

Maintenance

To ensure trouble free running it is recommended that the unit be cleaned once or twice a year.

Never attempt the following until the power is disconnected and the unit is cool

Demount the external cover, clean the heat exchangers (evaporator and condenser) with a brush or compressed air. Remove any dirt.

Check that water trap holes are not clogged.

The Blizzard air conditioning unit provides no fixed ventilation.

Fitted Equipment

ASH FRAMED DOORS

In order to provide customers with the latest designs of door furniture it is possible, due to the use of natural wood, that warping may occur. This should not detract from the correct functioning of items fitted in the caravan.

SHOWER

When using the shower, always ensure that the shower curtain is fully drawn thus avoiding water spray on unprotected areas.



Fitted Equipment

TABLES

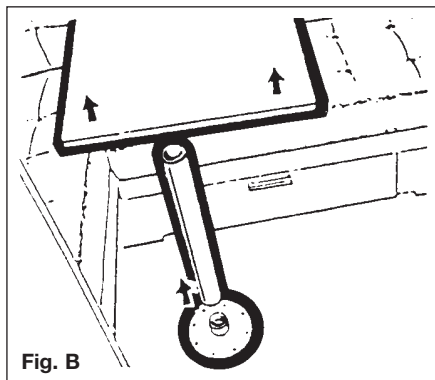
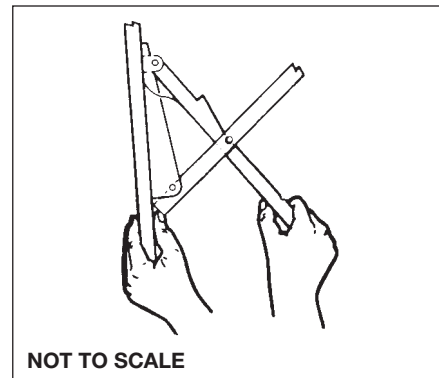
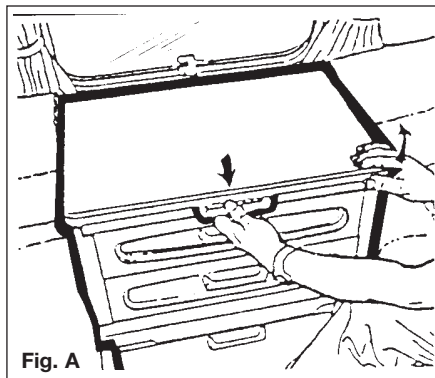
Slide top of drawers out and fold back to form convenient table. (Fig. A)

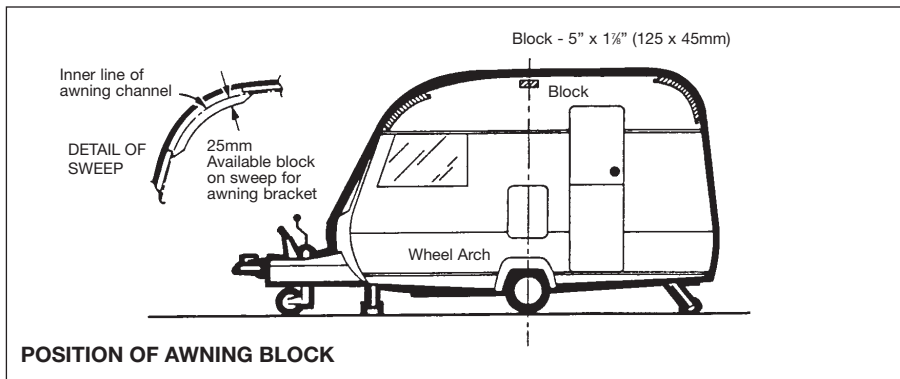
The pedestal table can be swung round for easy access to the seating and then re-positioned afterwards. (Fig. B)

Tables stored in the table storage compartment must be securely clipped into place whilst in transit.

CAUTION

When erecting the free standing table, be careful to avoid trapping fingers.





FIXING OF AWNINGS

In order to avoid puncturing the outer skin of the caravan wall, it is recommended that awning poles are fixed to your caravan using load spreading eyelet pads or rubber sucker pads.

Attaching awning brackets and associated fixings to your caravan by using mechanical methods which pierce the outer skin of the caravan wall can allow water ingress which will invalidate the product warranty.

Important:

Care must be taken when using an awning as poles and suckers can cause damage to exterior side panels.

Note:

Awnings should be kept ventilated when discharging products of combustion exhaust into them.





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Maintenance

CARAVAN EXTERIOR

Aluminium Panels

The stove enamelled paintwork is very durable and easy to clean owing to the high gloss properties.

Plastic Panels (GRP/ABS)

These are used for front and rear panels and, in some cases, for roof and side panels.

Cleaning

For both aluminium panels and plastic panels.

1. Wash the caravan regularly with mild detergent. Rinse with cold water and leather off.
2. For better protection a similar coloured good quality car wax may be applied.

When cleaning Sikaflex sealed areas, use Domestos/water.

WARNING: Under no circumstances use any abrasive cleaning agents or solvents on the exterior panels.

Care should be taken as the silicon in some polishes can attack the rubber used on the exterior for seals and gaskets.

Mouldings

All mouldings are of anodised aluminium and will retain their lustre for a long period if no abrasive materials are used to clean them.

Acrylic Windows

The windows in your caravan are fully double glazed and with care will remain sparkling and scratch-free.

Cleaning: Wash down as you would your car. Do not use a sponge on dirty windows.

When all dirt has been removed, dry with a leather or 'Vyleda' type cloth, the catches and stays do not require lubricating.

Keeping your acrylic windows sparkling:

Removing Tar

Use 'Jove Tar Remover' on our double glazed windows, it is obtainable from most leading car accessory or Do-It-Yourself shops. Do not use petrol or other chemicals.

Condensation

As your caravan is double glazed you may occasionally get condensation inside the double glazing. This is particularly so in severe weather change (usually spring and autumn) and is easily cured in dry weather.

- i) Remove the plastic plugs from interior top of each window.
- ii) Leave unplugged for approximately 1-4 hours until condensation has cleared.

WARNING: Do not wash your caravan with a high pressure washer as these can permanently damage the seals of your caravan.

CARAVAN INTERIOR

Follow these guidelines to ensure your investment is receiving the very best attention.

Side Walls, Roof Lining

A simple wipe over with a damp cloth and a very mild detergent is all that is needed.

Soft Furnishings

Should be vacuumed occasionally to remove grit and sand and help to keep its smart appearance and ensure long life. The upholstery can be cleaned with a mild, reputable upholstery cleaner. It is recommended that the curtains and pelmets are specialist cleaned only. The foam used in cushions is manufactured to meet fire regulations. It requires time to return to its normal position after prolonged use.

Work Surfaces

You should not stand very hot items on any of the work surfaces, especially models with polycarbonate moulded sinks and drainers.

Cupboard Catches

It is advisable to lightly oil all cupboard catches, sliding bolts and hinges from time to time.

Bathroom, Shower Room and Kitchen Equipment

All the Thermoplastic parts in these areas have easy clean surfaces. To ensure long life and prevent damage you must not use any

cleaning materials at all and ensure water temperatures do not exceed 70°C, (putting cold water in first is suggested). After every use it is essential that you rinse with clean water only and wipe with a soft damp cloth. Failure to follow these simple instructions may result in premature failure or cracking which will not be covered by any guarantees (including extended warranties).

Furniture

A simple wipe over with a damp cloth should be all that is required. Polishing with a proprietary brand of wax polish enhances and maintains furniture in showroom condition.

It must be remembered that because the frames of the doors are made of ash, which is a natural product, they can be affected by temperature and humidity and may bow under certain conditions. As conditions change they should revert to their original positions.

WINTERISATION/STORAGE

This is probably an opportune moment to arrange for the caravan to have its annual service at your appointed dealer.

The following applies wherever your caravan is stored particularly during the winter months.

Do not park near trees or larch type fences, due to possible wind damage.

Keep any grass around the floor of the caravan short, to maintain air flow and stop any possible damp getting into the caravan.

It is advised that the caravan is ventilated regularly throughout the winterisation /storage period, opening windows, doors and rooflights when possible.

General

All moving parts should be checked for free operation.

Clean all cooking appliances and refrigerator.

Lubrication should be carried out at the points illustrated in the general notes on chassis maintenance (page 98).

Charge up the on-board battery every 2 months.

Check alarm battery condition every 2 months and charge if necessary.

Leave the refrigerator door open.

Leave furniture doors and lockers open to allow air to circulate fully.

Soft Furnishings

Clean and dust the upholstery and if possible remove before placing the caravan into winter storage. Alternatively, stand the cushions on their edges to allow circulation of air. This will reduce the possibility of dampness from condensation.

Keep curtains or blinds closed, to minimise fading of furniture.

If the blinds and/or flyscreens remain down for a prolonged period of time, re-tensioning of the springs will be necessary before re-use.

Wheels and Tyres

Do not store in one position with partially deflated tyres. The tyre walls will suffer and do present a real danger of blow outs, especially when travelling at faster speeds than are allowed in the UK.

The wheels should be turned every couple of weeks or even better, the wheels removed and the caravan placed on "winter wheels" or axle stands.

If you are removing the wheels, follow the jacking procedure for changing a wheel.

Water System

The water heater MUST be drained to prevent frost damage. The drain plug, which is on the outside of the flue cowl, should be unscrewed to permit draining and removed until the system is to be refilled (see page 45).

To allow the system and the tank to drain effectively, open ALL hot and cold taps while the heater is still warm (see 'TAPS' in Services Section).



Maintenance

Remove shower head.

The Thetford Cassette porta potti is easily winterised for storage. Empty the fresh water tank using the drain tube/fresh water tank level indicator (level indicator on electronic models only). Pull the lever indicator/drain tube down from top plug position and outward through door opening to drain water from the tank.

Empty the water fill funnel by pulling the bottle away from tank. Remove the small water cap on the filler bottom, allowing water to drain from the water funnel. (Not C-200 toilet).

Do not tighten caps, this helps in keeping unit dry.

The pour out spout and vent plug can be removed. Seals should be greased if necessary with acid-free vaseline.

Remove the drain stop plugs on the fresh water pipes (see Fig. 1). These are located through the floor on the underside of the caravan.

Lower and raise the front of the caravan by winding the jockey wheel handle to allow excess water left in the water pipes to drain away. This should not be done if the caravan is stored on blocks or axle stands.

Leave the drain plugs and the taps open.

Push up collar (A) to release and pull plug (B) down to remove.

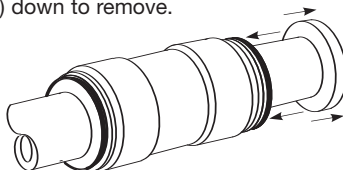


Fig. 1

The caravan may be left in this condition over winter or until ready to use. It is recommended to leave the taps in the open position during storage.

Recommissioning the Water System

Fill the fresh water tank on the Thetford Cassette porta potti using a hose or jerrycan until the water in the funnel reaches the neck. Tank capacity is 15 litres. Aqua Rinse may be added to improve cleaning of bowl and flushing of unit. (Not C-200 CE toilet).

Replace cap. Swing back the water fill funnel until it touches the water tank.

Add Aqua Kem (100 ml) into the Cassette (or 120 ml if using Aqua Kem Bio) through the pour out spout. Add small amount of water through the pour out spout and replace the cap.

Close the cold taps and ensure all the drain plugs are fitted.

It is advisable after storage to flush the water system initially with a sterilising agent (such as Milton), and then with water repeating until the system is well flushed through.

Connect the pump.

Fill the system with water until water flows freely from the hot taps. About 2 gallons of water will be required. Close the hot taps.

Appliances

Before starting caravanning after storage check all gas appliances and electrical points.

Note: Preferably not less than once a year, the electrical installation should be inspected and tested by a qualified electrician.

After storage it is advisable to air the caravan and clean throughout, especially cooking appliances and the refrigerator.

Replace the bedding and wheels if they were removed for storage.

Important

Always follow the manufacturers recommended procedures after use of fitted equipment in the caravan and before storing for any length of time.

ALKO RUNNING GEAR

Coupling Head

The ball couplings are entirely automatic in operation and designed for one hand operation to suit the 50mm international ball recommended by the British Standards Institution, National Caravan Council and the Society of Motor Manufacturers and Traders. Each type has provision for an anti-theft device (available as an extra) consisting of brass insert, complete with 2 keys. The locked button will prevent movement of the handle, therefore making it possible to lock the coupling either “on” or “off” the towing ball.

Operation - Type AK10/2

Lift locking trigger, and lift handle upward and forward. Place the unlocked coupling onto the towing ball and with the slightest downward pressure it will lock onto the ball automatically. Ensure locking trigger returns to its free position before commencing to tow.

Operation - Type AK 13/2

Lift handle upward and forward, this disengages the security tooth. Place the unlocked coupling onto the towing ball and with the slightest downward pressure it will lock onto the ball automatically. The security tooth should again be fully engaged.

Uncoupling

Having lowered the jockey wheel to the ground, operate the handle as previously described. Lift the coupling clear of the towing ball either manually or by operating the telescopic jockey wheel.

IMPORTANT

If the nose of the caravan is lifted manually the locking trigger must be engaged first and the handle lifted forward. Failure to do this will cause the nose-weight to be transmitted through the locking button and damage will occur.

Forward Braking

In the free position, with the handbrake fully forward in the OFF position, the drawshaft of the overrun device is fully extended and the shoes are clear of the drum.

As the towing vehicle brakes, or starts to drive downhill, the drawshaft of the overrun device is depressed toward the unit being towed. This action imparts linear motion to the main shaft of the overrunning device which is transmitted via the overrun lever, brake rod and Bowden cable to the expanding clutch. This mechanism forces the leading brake shoe and, by reaction, the trailing shoe outwards into contact with the drum.

Friction between the brake shoes and the drum creates a tendency for both shoes and

the expanding clutch to move in the direction of forward rotation until they abut against the adjuster box. This ensures that both remain in the braking position.

Reversing

When the towing vehicle reverses, the drawshaft is pushed backward, moving the overrunning device through its full travel. This movement is transmitted in the normal manner to the expanding clutch.

The clutch forces both shoes into contact with the drum. Initial friction between these creates a tendency for the shoes and expanding clutch to move in the direction of wheel rotation i.e. reverse. This movement imparts pressure to the spring-loaded auto-reverse lever, causing it to collapse. Thus, friction between the shoes and drum is almost eliminated, allowing the trailer to reverse as one with the towing vehicle.

Slight forward movement of the chassis will allow the coil spring to reassert itself, enabling the reverse lever to recover to its normal position. Normal braking is then immediately available.

Parking

The AL-KO parking brake system incorporates a patented device for added safety when parking on a reverse-sloping site or steep hill.



Maintenance

The AL-KO parking brake system comprises a handbrake lever mechanism actuating a Bowden cable which operates a brake unit assembly contained within the wheel hub.

AL-KO provide two types of parking brake system on their trailers, with the Bowden cable and the wheel hub brake unit being common to both types.

The difference between the systems is the handbrake mechanism used to actuate the Bowden cable.

AL-KO's unique parking brake system requires a source of stored energy to lock the wheel brakes should the trailer start to move after it has been uncoupled from the towing unit.

This energy source can be provided by either a spring cylinder charged by hand or by a gas filled cylinder acting as an energy store.

Each system requires a slightly different method of operation when parking the trailer, though they both operate in the same manner when forward or reverse braking is applied.

Spring Cylinder Type

A spring system is attached to the link between the handbrake lever and the central brake rod. Full application of the handbrake lever (such that the lever is vertical) to the last tooth of the ratchet compresses a steel spring inside the steel cylinder and energy is stored.

The action of the brake lever imparts motion to the brake rod, the Bowden cable and the expanding clutch. This mechanism forces both shoes into contact with the drum.

At this stage, the brake unit is latent, the mechanism waiting to see in which direction the trailer will start to move.

If the trailer starts to move backwards, the stored energy in the spring will be released. The trailing brake shoe and by reaction, the leading shoe together with the expanding clutch will tend to move in the direction of rotation (reverse) and abut against the stop. Thus the trailer is braked.

However, if the handbrake is NOT fully applied to the last tooth (i.e. vertical) and is set to some lesser position than the full vertical, then problems will almost certainly arise after the trailer has been uncoupled from the towing unit.

If the trailer is parked on a reverse slope or if it is pushed backwards, then the brake mechanism will act as though the trailer is being reversed by the towing unit. The shoes and expanding clutch will tend to move with the direction of rotation (reverse) which imparts pressure to the spring-loaded reverse lever, causing it to collapse. Thus, friction between the shoes and the drum is almost eliminated and the trailer will run away.

Operating the Handbrake

Some people may find it difficult to set the handbrake lever to its full vertical position without a great deal of physical effort.

However, AL-KO have designed their system so that the average user need not do so.

For successful parking on a reverse slope or steep hill, the operator need only apply the handbrake with one hand while gently but purposefully inching the caravan trailer a small distance backwards with the other.

The user must supply this small but essential backward movement to ensure that the fulcrum of the transmission lever moves past the point of reverse, thus preventing the lever from collapsing as it would normally do when reversing.

Most users will find it easier to stand facing the towing unit while applying the hand brake and at the same time gently push the caravan an inch or two backwards with their posterior.

Gas Cylinder Type

A gas cylinder, acting as an accumulator of stored energy, can be fitted to the handbrake lever to provide the same effect as a spring cylinder.

This system is much more user friendly, as the handbrake lever need only be applied until it passes a clearly detectable dead point for it to render parking on reverse slopes or steep hills absolutely safe.

It takes minimal effort from the operator to move the handbrake lever past this dead point.

If the caravan or trailer starts to move when uncoupled from the towing unit, then the energy stored in the cylinder is released and the brakes applied in the normal manner.

Important Points to Remember

It is absolutely vital that the slight backwards push of the caravan or trailer is applied before it is uncoupled from the towing unit.

It is also important to check that the brake has in fact operated correctly as soon as the caravan has been uncoupled.

If the caravan or trailer is to be parked on a steep slope or on loose or slippery surfaces, it is advisable to chock the wheels.

Where possible, always ensure that the handbrake lever is in the fully vertical position.

When the handbrake has been applied, it is possible for the caravan or trailer to roll back as much as 25cm before the full force of the brake takes effect.

All components of both the overrun device and the wheel brakes must be those manufactured by AL-KO as the braking and reversing systems must be matched to ensure optimum braking performance.

Combining parts manufactured by AL-KO with those produced by other suppliers will invalidate any guarantee entered into by AL-KO.

Recommended Brake Adjustment Procedure

Jack up the axle raising the road wheels clear off the ground. Ensure drawshaft is fully extended (in the towing position) and the handbrake is in the "OFF" position (fully forward).

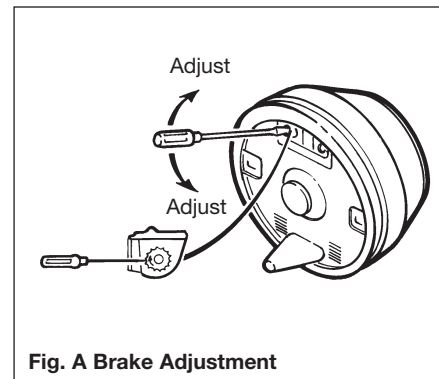
Check that there is some end float in the rod and spring cylinder.

Adjust brakes first (Fig. A) and the linkage only if necessary.

IMPORTANT: During Wheel brake adjustment the drum must only be revolved in the direction of FORWARD rotation. Do not use excessive force during adjustment.

Wheel brake adjustment is effected through a hole in the brake backplate (see Fig. A). With a screwdriver adjust the starwheel in the direction of the arrow until there is resistance to wheel movement. Slacken until the brake drum turns freely in the forward direction. A check for correct adjustment can

Maintenance

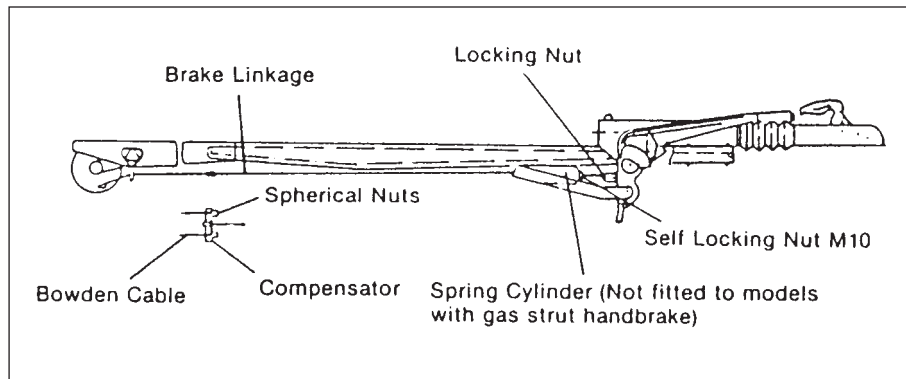


be made at the chassis end of the bowden cable. When pulled the cable should extend between 5 and 8mm.

Apply the handbrake two or three times to ensure brake shoes are centralised in the drum. Re-check the shoe clearance at the wheel brake.



Maintenance



Centre brake rod. Check full thread engagement in the fork end of the overrunning device. Secure locking nut.

At the axle ensure compensator plate is parallel to the axle by setting the adjuster nuts on the bowden cables. Secure lock nuts.

Adjust centre brake rod at the rear nut so there is no clearance between the overrun lever and the drawshaft and plate. Secure lock nuts.

Correct adjustment of the linkage can be checked by engaging handbrake lever on the second tooth of the ratchet segment. In this position you should feel a slight braking force at the wheels.

Finally screw up the self locking nut to give 1mm clearance between the nut and the spring cylinder.

Note: Reversing will be difficult if either wheel brake or brake linkage is overadjusted.

GENERAL NOTES ON MAINTENANCE

1. Brake Drum/Hub Assembly

The EURO AXLE fitted to your caravan comes complete with maintenance-free wheel bearings GREASED AND SERVICED FOR LIFE. Adjustment is not required during the design life of the sealed bearing (100,000 km).

WARNING: If replacement of the brake drum or shoes is required, this must be carried out by authorised AL-KO Service Centres.

If the warning is not observed:

- the warranty is void and
- the wheel may become detached.

Any attempt to slacken the nuts on the stub axle will result in the toe-in being adjusted.

This will cause:

- Loss of guarantee
- Bad towing performance
- Increased tyre wear

2. Couplings

1. Clean and grease spherical seat, bearing parts and pivot pins regularly.
2. Thoroughly examine all moving parts for wear and correct functioning.
3. Couplings should never be drilled.

3. Towing Ball

The automobile towing ball should measure 50mm maximum and 49.5mm minimum (DIN 74058). If the ball is found to be worn it should be replaced immediately.

4. Overrunning Device

The device housing is packed with grease on assembly, but will require periodic maintenance to ensure smooth operation of the braking system.

1. Regrease the shaft bearings via the grease nipples provided at 3000 mile intervals, and before storage.
2. Ensure correct functioning of all pivot pins and levers and oil regularly.
3. Ensure correct functioning of handbrake ratchet and oil regularly.

5. Jockey Wheel

Lubricate wheel and screw thread periodically.

6. Brake Linkage

All moving parts should be lubricated periodically to ensure their satisfactory operation.

It is recommended that all brake linkage threads are liberally smeared with grease for protection and as an aid to future adjustment of the system.

7. Corner Steadies

The screw and pivot pins should be lubricated periodically to ensure their satisfactory operation.

8. Braking System

At 500 miles then every 3000 miles or 1 year check and adjust brake linkage to compensate for any stretch of the bowden cables.

Check and adjust wheel brakes to compensate for wear.

IMPORTANT

When replacing the wheels you should tighten the nuts in rotation diagonally, taking care to tighten them equally.

The recommended torque for steel wheels is 88Nm (65 lb/ft) and for alloy wheels 115Nm (85 lb/ft).

CHECK THE WHEEL NUTS BEFORE STARTING EVERY JOURNEY.

TYRE WEAR AND DAMAGE

The legal requirement for tread depth on motor vehicles also apply to caravans.

In order to equalise wear it is suggested that the wheels be balanced and changed around from time to time.

It is dangerous to neglect tyre damage and should you detect a blister, a rupture or a cut which exposes the casing or if it has suffered a violent impact (for example against a kerb) such that there is a risk of internal damage, it is advisable to have it examined by a tyre specialist as soon as possible (as this can affect tracking).

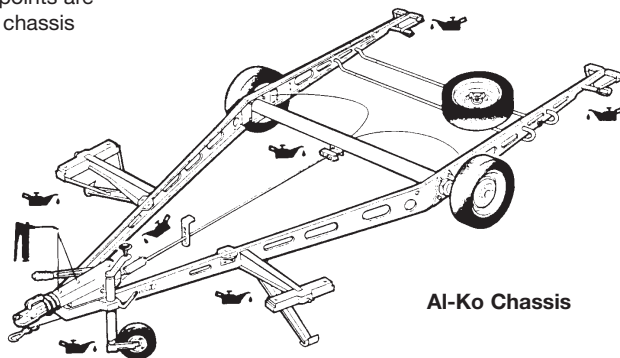
Tyres should be inspected regularly and if any signs of visible deterioration (sidewall cracking, delamination of tread, etc) are evident, they should be replaced regardless of there being a legal minimum tread depth.

WHEELS

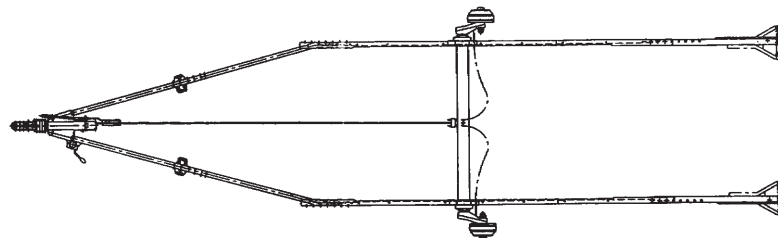
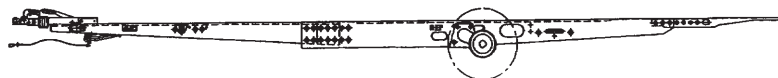
The condition of the wheels should be checked regularly, particularly for distortion of flanges and the wheel dish. Wheels which are damaged or distorted, or having wheel stud seatings cracked or deformed, must not be repaired.



Lubrication points are same for all chassis



Al-Ko Chassis



Vario Chassis

ALKO AND VARIO GALVANISED CHASSIS

Hot dip galvanising offers high corrosion protection by forming a barrier layer through reaction with the atmosphere. This will be apparent by the chassis members changing to a light grey colour. During winter periods or storage where there is insufficient air circulation or heavy moisture, a soft porous, light grey oxidation layer may form. This is known as 'White Rust' and should NOT be confused with rust. As applied to steel these deposits should be removed by use of a wire or hard nylon brush.

SHOCK ABSORBERS (OPTIONAL)

The Euro Axle fitted to the caravan is capable of being equipped with octagon shock absorbers specially developed by AL-KO to ensure optimum roadholding of your caravan. They are designed to reduce even the slightest suspension rebound and make towing safer and more comfortable.



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Fault Finding

WATER

Problem	Possible Cause	Remedy
Water not flowing from any tap when operated but pump runs	Freshwater tank empty Pump wired in reverse Pump not primed Pipe inlet or outlet pipe disconnected Pump pipes restricted by kinking Blockage in pump inlet or outlet pipe Blocked in-line filter of pump filter Air leak in suction line to pump	Check Check wiring, refer to pump manufacturers instructions Refer to pump manufacturers instructions Check connections Check pipes run Check, starting inside freshwater tank Dismantle and clean Check for bubbles & secure with clip
Pump does not run	Pump or tap incorrectly wired Pump fuse blown Battery disconnected Pump seized or overheated Pressure pump sensing switch may have failed Contacts may be faulty Wiring connections may be faulty On switched tap version, microswitch could be faulty	Refer to pump/tap manufacturers instructions Check wiring connection and then replace with fuse of correct rating Check connections Refer to pump manufacturers servicing instructions Refer to pump manufacturers servicing instructions Check contacts in plug and socket are clean and making contact Check wiring connections Disconnect wires from microswitch and join together. If the pump operates, microswitch should be replaced
Water flows from cold tap but not from hot	Feed pipe to water heater incorrectly connected to the heater outlet Blockage in hot pipeline Heater inlet or outlet pipes kinked preventing flow Hot tap not connected Hot tap failed or blocked Heater non-return valve jammed	Refer to installation instructions Disconnect pipes and inspect Check and re-route if necessary. Ensure that hose is Carver recommended type Refer to installation manual Disconnect and inspect Seek service attention

WATER (continued)

Problem	Possible Cause	Remedy
Water flows from hot tap but has reduced flow from cold	<p>Cold water pipe kinked preventing flow</p> <p>Blockage in cold pipe line</p> <p>Cold tap not connected</p> <p>Cold tap failed or blocked</p> <p>If a water filter is fitted, the cartridge is exhausted</p>	<p>Check and re-route if necessary</p> <p>Disconnect pipes after 1st Y connector and check up to tap</p> <p>Refer to installation instructions</p> <p>Disconnect and inspect</p> <p>Replace cartridge</p>
Reduced flow from both hot and cold taps	<p>Battery condition low causing pump to run slowly</p> <p>If new taps have been fitted they may be restricting flow</p> <p>Pump needs servicing</p> <p>Partially blocked pump filter or in-line filter, if fitted</p> <p>Pump outlet pipe kinked restricting flow</p> <p>Water leak</p>	<p>Check battery state of charge, refer to electrical supply note</p> <p>Disconnect and check that they have at least 1/4" (6.3mm) bore</p> <p>Refer to pump servicing instructions</p> <p>Dismantle and clean if necessary</p> <p>Check and re-route if necessary</p> <p>Check all water connections</p>
Reduced flow from either tap	<p>Y' connector(s) fitted incorrectly</p> <p>Pipe kinking restricting flow</p> <p>Bore size difference in taps</p>	<p>Refer to installation instructions</p> <p>Check and re-route if necessary</p> <p>Use taps of equal bore size</p>
Warm water flows out of cold tap	<p>Hot water back-feeding into cold line, usually if mixer tap or single outlet hot and cold taps being used</p>	<p>Fit non-return valve in cold supply, near tap</p>
If pump motor runs steadily and will not stop	<p>Battery voltage may be too low (below 10.5 volts)</p>	<p>Check that there is water in the container</p> <p>Adjust switch and/or re-charge battery</p> <p>Check all connections in pipework</p>



Fault Finding

GAS

Problem	Possible Cause	Remedy
Hob does not light	No gas Air in pipe	Check level of gas in bottle Check gas bottle valve is on Check gas taps are on Purge system Refer to hob manufacturers instructions
Oven does not light	No gas Air in pipe	Check level of gas in bottle Check gas bottle valve is on Check gas taps are on Purge system Refer to oven manufacturers instructions
Space heater or central heating	No gas Over gassed Air in pipe	Check level of gas in bottle Check gas bottle valve is on Check gas taps are on Check exhaust outlet is clear Turn off appliance, wait 2 minutes and try again Purge system Refer to space heater or central heating boiler manufacturers instructions
Fridge does not light	No gas Air in pipe	Check level of gas in bottle Check gas bottle valve is on Check gas taps are on Purge system Refer to fridge manufacturers instructions
Water heater does not light	No gas Air in pipe	Check level of gas in bottle Check gas bottle valve is on Check gas taps are on Purge system Refer to water heater manufacturers instructions

CASSETTE TOILET

Problem	Remedy
<p>Bowl does not drain when toilet is flushed.</p> <p>Cassette is overfilled</p>	<p>DO NOT REMOVE CASSETTE. While inside the caravan turn flush knob anti-clockwise to open valve blade and leave it in the open position.</p> <p>Open access door on side of caravan. Rotate pour-out spout outward. Place appropriate size container under spout cap. Remove cap carefully. Allow bowl contents to drain into container. This will lower the water level in the bowl. Replace cap and return pour-out spout to stored position. DO NOT REMOVE CASSETTE.</p> <p>Go inside the caravan and turn the flush knob clockwise to close valve blade. Now, the cassette may be removed following the normal removal and emptying procedure.</p>
Odours	Use proper amount of holding tank deodorant specified on bottle.
Toilet tissue does not fit into compartment.	Since some tissues are supplied on larger rolls, it may be necessary to use some tissue before storing into compartment.
Soiled bowl after flushing	Partially fill bowl to cover soiled portion of bowl. Next flush will dissolve waste. Tip: Leave valve blade open during use.
No power to add water to toilet bowl	<p>Check cassette safety sensor switch and fuse-holder for proper engagement and operation.</p> <p>Note: Cassette has to be removed to reach switch and fuse.</p> <p>Insert cassette and try adding water to toilet bowl.</p> <p>Toilet can be flushed manually. Add water. Add water to bowl from a separate container. Turn flush knob anti-clockwise to open valve blade. Turn clockwise to close valve blade.</p>
Cassette cannot be removed	<p>Check for obstacles under retaining clip. Depress retaining clip several times to check operation. Remove cassette.</p> <p>Flush knob and valve blade in partial open position. Close valve blade by moving knob clockwise.</p> <p>CAUTION: If valve blade is open during cassette removal, severe damage to system can occur. Never force insertion or removal of the cassette tank.</p>
Valve blade mechanism sticks or is hard to open	Spray light film of silicone on blade.
Major unit malfunction	Contact your original Caravan Dealer.



Useful Information

OWNERS CLUB

The Owners Club is a completely independent organisation run for the benefit of the caravan owners. They have numerous rallies during the year in various parts of the country and every third year there is a 'Works Rally' where owners have the opportunity to visit the factory. Apart from the friendliness and companionship the Club generates it is also actively engaged in charity work for those less fortunate than ourselves. The address of the Secretary of the Owners Club can be obtained from Supercare (SML Ltd), Tel: 01482 875740.

SPARES AND AFTER SALES SUPERCARE (SML LTD)

There are numerous items available from your dealer ranging from door catches through to spare wheels and touch-up paints. Please note that all after sales enquiries must be directed through your supplying dealer. The after sales service at the factory is geared to support our dealer network as is the service provided by appliance manufacturers.

In the interest of safety, replacement parts for an appliance shall conform to the appliance manufacturers specifications and should be fitted by them or their authorised agents.

Note: Please remember to quote chassis

number when ordering any items from your dealer.

Spares and After Sales

Supercare (SML Ltd)
Dunswell Road
Cottingham
East Yorkshire HU16 4JX
Tel: 01482 875740
Fax: 01482 840082

Customer Care

Tel: 01482 875740
Fax: 01482 840861

NOTE:

The times for contacting Customer Care by telephone are:

9am to 4pm Monday to Thursday.
9am to 12.45pm Friday.

Swift Group Website

www.swiftleisure.co.uk

Swift Group E-Mail Enquiry

enquiry@swiftleisure.co.uk

REPAIR FACILITIES

Should you be unfortunate enough to suffer a major accident with your caravan it is comforting to know that we have a completely separate repair shop facility where their fully trained experts will undertake all types of major damage repair work.

Repairs of a minor nature should be referred first to your local dealer.

FACTORY TOURS

The ultra modern Northmoor production complex at the heart of the Group's manufacturing facilities is now open to the public, offering you a unique opportunity to see how the caravans are produced.

The tours operate on a Tuesday and Thursday between the beginning of April and the end of September (excluding factory holidays).

A programme of activities has been created to make the tour an interesting day out. You will be met at the Group's purpose built Learning Centre and shown a short corporate video before being given a slide presentation covering our complete manufacturing process. Professional Tour Guides will then take you and your party around the Northmoor complex which features state of the art technology. Headsets are supplied so that you hear every word your guide says. The tour finishes at the Group's after sales facility which holds parts for caravans up to 20 years old.

Taking part in the tour is by prior booking only and there is a small charge for adults and children over sixteen.

To reserve a place, you can complete the booking form enclosed with your new caravan or alternatively, arrangements can be made through any Dealer.

Useful Information

The enjoyment of caravanning can be greatly enhanced by membership of one or more of the various caravanning, motoring and holiday clubs. Here are some useful addresses:

CARAVAN CLUBS

The Caravan Club,

East Grinstead House,
East Grinstead
West Sussex, RH19 IUA
Tel: 01342 326944

The Camping and Caravanning Club,

Greenfields House,
Westwood Way,
Coventry,
West Midlands.
Tel: 01203 694995

MOTORING ASSOCIATIONS

Automobile Association (AA)

Fanum House,
Basingstoke,
Hants. RG1 2EA
Tel: 0990 448866
www.theaa.co.uk
e-mail: customer.services@theaa.com

RAC Motoring Services

RAC House,
M1 Cross,
Brent Terrace,
London, NW2 1BX
Tel: 0990 722722

Green Flag National Breakdown

PO Box 300,
1, Cote Lane,
Leeds, LS99 2LZ
Tel: 0345 670345

TRADE ASSOCIATION

National Caravan Council

Catherine House,
Victoria Road,
Aldershot,
Hampshire, GU11 1SS
Tel: 01252 318251
www.martex.co.uk/ncc
e-mail: mail@martex.co.uk

CRIS

HPI Equifax

Dolphin House,
New Street,
Salisbury,
Wiltshire SP1 2TB
Tel: 01722 411430/422422

Swift Group Limited
Dunswell Road, Cottingham,
East Yorkshire HU16 4JX
Tel: (Supercare) 01482 875740
e-mail/web site: www.swiftleisure.co.uk

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Quality with Style

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